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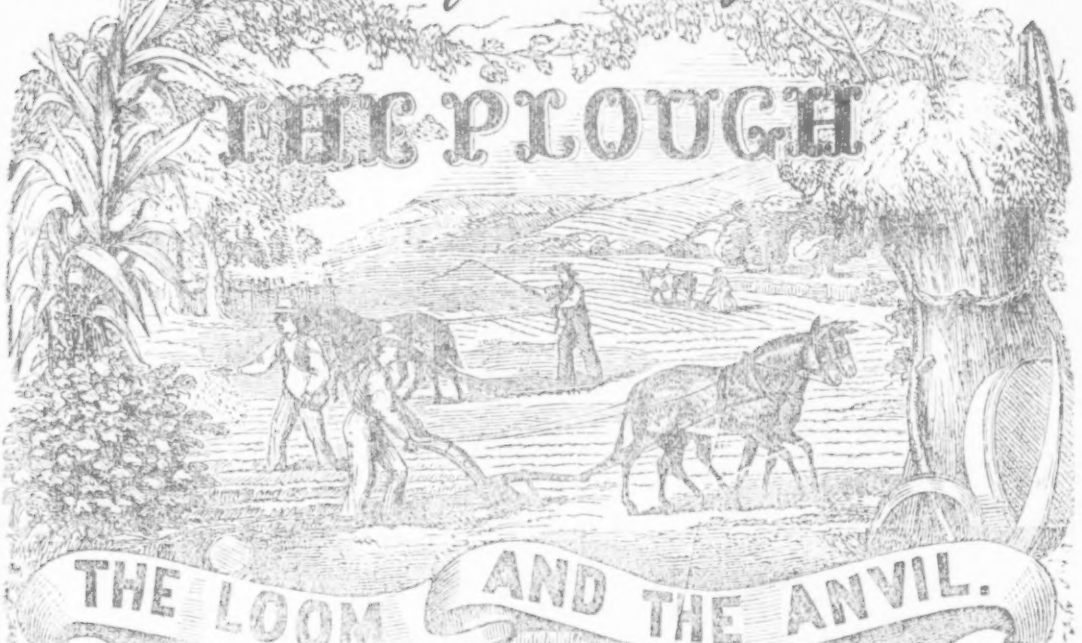
THE PLOUGH



THE LOOM AND THE ANVIL.

F. G. SKINNER AND MYRON FINCH, EDITORS.

MOSES P. PARISH ASSISTANT EDITOR.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—MECHANICS—NEW INVENTIONS—A SOUND PROTECTIVE POLICY—FARM BUILDINGS—COTTAGE DESIGNS—FRUIT TREES—FLOWERS—GARDENING—BEES, CATTLE, HORSES, HOGS, SHEEP, POULTRY, &c.

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The Plough, the Loom, and the Anvil.

EDITED BY F. G. SKINNER AND MYRON FINCH.

MOSES P. PARISH, Assistant Editor and General Agent.

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The Plough, the Loom, and the Anvil.

VOL. V. DECEMBER, 1852. No. 6.

TO THE HON. R. M. T. HUNTER,

CHAIRMAN OF THE COMMITTEE ON FINANCE, OF THE SENATE.

SIR—Throughout this country there prevails at this moment an almost universal desire for improved means of transportation, to be obtained at almost any cost. North, south, east, and west, we hear of new rail-roads, and every where along the Atlantic coast new lines of steamers are being projected with a view to increase our facilities of trade with the distant nations of the earth. Bonds are manufactured for sale at almost any rate of discount, and brokers are amassing large fortunes by standing between the capitalist who supplies the iron and the farmer who seeks to have the roads. In aid of all these various schemes, Congress is at one time importuned for grants of land, and at another for subsidies to steamers; at one time for permission to pay the duties on iron in some manner that shall render them almost nominal, and at another for a repeal of those duties; and the lobbies of our halls of legislation are filled with borers ready to establish, to the perfect satisfaction of those who listen to them, that the more exclusively we devote ourselves to the construction of roads and ships the richer will the people grow and the more powerful must become the nation; and yet, if we look back but half a dozen years, we may see the wealthy England brought to the verge of universal bankruptcy by a course of operation precisely similar to that now so strongly recommended among ourselves. As chairman of the Finance Committee of the Senate, most of these applications come before you, and all of them must have interest for you, as all have to affect, either favourably or unfavourably, the public revenue; and therefore it is that I am disposed to think that you may be willing to give consideration to the facts to which I now desire to ask your attention.

Twenty years since there existed, as now exists, amongst us, a strong disposition for the making of roads and canals, and then, as now, the duties on iron were regarded as offering an impediment that should be removed. Cheap iron was desired, and with a view to have it cheaply, rail-road iron was freed from duty. Up to that time, under the tariff of 1828, there had been a steady increase in the domestic production of iron, and of course *a steady increase in the competition for the sale of it*, the tendency of which was necessarily to establish a low range of prices. The increase in four years had been more than fifty per cent., or 70,000 tons on 130,000; and had protection been maintained, there could be no doubt that the increase of following years would have been in a far greater ratio. Estimating it at, however, only the same rate, the domestic production of 1836 would have been above 300,000 tons, and in 1840 would have reached nearly half a million. With the abolition of duty there was, however, a cessation of the building of furnaces and rolling-mills, and diminished competition for the sale of iron: the effect of which is seen in the following statement of prices:—

At the date of the passage of the act of 1832, the average price of bar-iron, of all kinds, *in England*, was..... £5 13*s.* 9*d.*

In the year which succeeded the passage of that act it rose to 6 12 11

and thus a considerable portion of the duty that had been remitted was added to the profits of British ironmasters.

In 1834, it rose to	£ 6	18*s.*	9*d.*
And in 1836, it reached	10	12	6
After which, and for five years, the average was about	9	0	0

In this period our import of iron *of all kinds* was as follows:—

1832.....45,000	1835.....63,000	1838.....78,000
1833.....62,000	1836.....91,000	1839.....85,000
1834.....47,000	1837.....54,000	1840.....72,000

The total excess of the eight years following 1832, was therefore 192,000 tons, and the average annual excess, over 1832, only 24,000 tons.

Under the tariff of 1828, duties were $12.50 on pigs, $18 on hammered, and $37 on rolled bars, and the total import of the latter in the eight years above referred to was 307,000 tons. How much of this consisted of rail-road bars, free of duty, the Treasury reports afford no means of ascertaining, but admitting one-half to have been of that description, the average reduction under the acts of 1832 and 1833 could not have varied much from $20, and this was accompanied by *an increase of price* in the period from 1836 to 1840, amounting to $20; and thus the foreign ironmaster was, by the reduction of duty, enabled to put into his own pocket the whole sum relinquished by the treasury,—thus proving that he it was that had paid the duty under the tariff of 1828.

It may be said, however, that if the duty had not been modified, the foreign price would still have risen, and the consumer would have had to pay that price and the high duty too. How far this suggestion is worthy of consideration I will now examine. From 1828 to 1832 the domestic production increased 70,000 tons, as has already been stated. Had the circumstances continued under which that increase took place, there is no doubt that it would, before 1840, have reached, and probably exceeded half a million. I have, myself, no doubt that it would have done so, and this would have given an excess in the domestic supply of 1,200,000 tons; whereas the total excess of import in eight years was under 200,000 tons. Now the average price for the years from 1829 to 1832 was under £6 per ton, or..... $28 00
And if to this we add for duty an average of 30 00

We obtain as the price at which our ironmasters were then induced to build furnaces and mills*..... ..... $58 00

The average foreign price of the years 1836 to 1840, having been about..... $45 00
If to this be now added for duty..... 15 00

We obtain as the cost of iron under a system that resulted in closing our furnaces and destroying domestic competition..... $60 00

Under the first system we should certainly have added a million, and very probably even twice that number of tons to our production in this period, and such an addition to the general supply could not have failed to be attended with a reduction, instead of an increase, of prices. We should have been competent to supply our whole demand, and the effect of this would have been that Great Britain could not have sent us a ton except at lower prices

* This, of course, excludes freight, commissions, and other charges.

than those of 1832. We should then have determined her prices, whereas the reduction enabled her to determine our's. As long as a community is dependent upon a distant market for even the smallest portion of its consumption of any article, the cost of obtaining that small quantity must fix the price of the whole; and therefore it is that the price of iron among ourselves has always kept pace with the price abroad. The import of 1832 was but one-fifth of the total consumption, and yet the cost of obtaining that one-fifth fixed the price of all. In 1836 it may have been one-third of the whole, and the price of all went up with the advance in England, enabling the few rich ironmasters who had survived to make large fortunes,—not, however to be employed in the iron trade, because it was obvious that under the then existing system there could be no safety in investing capital in building furnaces or mills. Now, had protection been maintained, security would have existed, and there would have been a constant increase of production, until it would have far exceeded the consumption that we see to have taken place; and this must have been attended with one of two consequences—either the consumption must have increased so largely as to render it necessary still to import British iron, or prices must have fallen so much that a further increase in the number or the powers of the furnaces would have been inexpedient. In the former case, the makers of iron would have been steadily accumulating the means for enlarging their business, until at length production would overtake consumption, and prices would gradually have fallen, until at length they would have reached the level of those of England, as would long since have been the case had the tariff of 1828 been maintained.

The effect of the increased duty under that tariff was to throw upon the British producer the payment of a large contribution to our revenue, precisely on the same principle that any increase of difficulty in reaching market throws upon the farmer and planter increased cost of transportation. Let a railroad be swept away by an inundation, and the price of produce falls in all the country accustomed to use that road; or, on the other hand, let a new road be opened, and the price of produce rises. When the waters of the Mississippi are low, the price of produce falls, whereas the prices rise with the reduction of freight that follows an increase in the depth of water in the channel. Let freights across the Atlantic rise, and at once we have a fall in the price of flour and cotton, followed by a corresponding rise when they fall again. The producer who *must go to any market* must pay the cost of getting there, whether that cost appear in the form of freight, commission, loss of weight, or duty; and that the British ironmaster has found himself in that position, is proved by the fact that prices abroad have fallen as duties have risen, and risen as duties have fallen.

The average price of iron in England, in the years 1826 and 1827, was £9 11*s.* 8*d.* The tariff of 1828 raised the duty, and yet the imports increased, as is here shown:—

1826–7.....21,000	1828.....17,000	1830–31.....45,000
1827–8.....22,000	1829.....21,000	1831–32.....62,000

The prices in the early part of 1828 had been in accordance with those of 1827, but the fall that afterwards took place appears to have been so great, that the average of the whole year was but £7 18*s.* 4*d.* Thereafter, the fall was steady, as is here shown:—

1829.....£6 16*s.* 8*d.*	1831.....£5 13*s.* 9*d.*
1830.....£6 3*s.* 9*d.*	1832.....£5 13*s.* 4*d.*

We have here a reduction of nearly four pounds, or about $19 per ton, to meet the increase of duty, and, at this low rate, the import was thrice greater than it had been before the passage of the act of 1828. For 21,000 tons in 1826, the British ironmaster received about £200,000; whereas, in 1832, he furnished 62,000 tons for only £340,000. The movement here is precisely the converse of that exhibited in regard to the compromise. Under the tariff of 1828, duties went up and foreign prices went down. The foreign producer here found himself compelled to pay into the national treasury a large portion of the price he had before received for himself; whereas, under the compromise act, he paid little into the treasury, and put into his own pocket much more than the difference, because diminished competition among ourselves caused larger demands to be made upon him, while the cost of carrying his goods to market was greatly diminished.

We may now, we think, understand how it is that the British ironmaster is enabled, under a system of low duties, to take so largely of our bonds.

In 1832, a ton of iron yielded him	$27.00
And it contributed to our revenue the sum of	$37.00
In 1836, the same ton of iron yielded him	$51.00
And the treasury received but about	$17.00

The difference in his receipt for the same identical ton of iron under the two systems was, as is here shown, *almost one-half of the whole;* and if he received pay for one-half in cotton, flour, tobacco, and coin, he could well afford to take the balance in bonds. A similar examination of the trade in cotton and woollen goods, tin, copper, and other commodities that we received from Great Britain, would show that the mass of the debt contracted in our trade with Europe from 1833 to 1840—estimated at 200 millions of dollars—consisted of the difference in prices we were compelled to pay under the two systems—the one of which looked to the establishment of domestic competition for the purchase of raw products, and for the sale of manufactured ones, and the other to the destruction of competition in both, leaving to Great Britain the power to fix the prices of all. In corroboration of this view, I will now call your attention to the trivial excess in *the quantity* of goods received from Europe in the time when we were running so largely in debt, as compared with that received under the tariff of 1828, when we paid off so large a portion of the national debt due in Europe. It has been seen that the excess in the import of iron from 1832 to 1840 averaged but 24,000 tons, and that the average of cotton cloth imported was even less than that of the four years from 1829–30 to 1832–33, is here shown:—

Total import of four years, 1829–30 to 1832–33...yds.	174,000,000	Total import for 1833–34 to 1840–41, 8 years	274,000,000
Average	43,500,000	Average	34,350,000

It would hence appear that the debt was due, not so much to the *quantity* of imports, as to the *augmented price* we had to pay for them, after we had stopped the building of mills and furnaces, and thus diminished domestic competition.

I would now beg you to remark that the objects of the alteration in the tariff were:—First—A diminution in the price of iron, and an increase in the consumption of it—neither of which was obtained; the price having risen as the duty fell, and the consumption, at the close of the compromise, having been less than it had been before the enactment of that law.

Second. It was to give us an increase in the facility of making roads and canals, whereas it left a large portion of the parties engaged in making

them, whether individuals, corporations, or states, in a state of hopeless embarrassment, with millions upon millions of unfinished roads and canals on their hands.

Third. It was to increase the consumption of cotton and to raise its price, and yet it found the average of three years at nearly *twelve* cents, and left it at *less than nine*.

Fourth. It was to raise the prices of land, by relieving the farmer from the payment of taxes for the support of the manufacturers, and yet it found lands high and left them low.

Fifth. It was to make a large market for food abroad, and yet the export of the last three years, when mills and furnaces were closed, was scarcely greater than in the corresponding years of the tariff of 1828, as is here shown:—

1830–31	$17,528,227	1839–40	$19,067,535
1831–32	$12,424,703	1840–41	$17,196,102
1832–33	$14,209,128	1841–42	$16,902,876
	$44,162,058		$53,166,513
Average	$14,720,686	Average	$17,722,171

We have here an increase of three millions of dollars, accompanied by a range of prices as low as we have almost ever known: and that such should have been the case is not extraordinary. We had, in a great degree, closed the domestic market, and had, therefore, more food for which we were forced to seek a market abroad, and the effect upon us was now exactly the same that had been exhibited from 1828 to 1832 in regard to the British ironmaster. He had then to pay a heavy duty on his way to market, and had, therefore, to content himself with a low price, while the farmer on this side of the Atlantic, found his market growing rapidly, with steady diminution in the necessity for going to a distant market. With the close of the compromise period, the positions of the parties were directly reversed. The British ironmaster had increased the facility for going to market, and could therefore demand high prices; while the American wheat-grower found himself under an increased necessity for going abroad to find a market, and was compelled to content himself with low ones, as is shown in the following statement of the exports of the closing years of the two systems:—

	1832–33.*		1841–42.	
Exports of	Quantity.	Value.	Quantity.	Value.
Beef and pork, tons	30,000	$3,109,634	51,953	$3,842,041
Butter and Cheese, tons	1,250	258,452	2,250	388,185
Wheat, bushels	32,221	29,592	817,958	916,616
Flour, barrels	955,768	5,613,010	1,238,602	7,375,356
Corn, bushels	487,174	337,055	600,308	345,150
Corn Meal, barrels	146,678	534,309	209,199	617,817
Rye Meal, barrels	36,038	140,017	34,190	124,396
Horses, Mules, Ship Bread, &c.		629,231		954,474
Total		$10,651,300		$14,564,035

It is here seen that the quantity has almost doubled, and yet the value has increased but little more than a third, the necessary consequence of increased necessity for dependence on a distant market. It will not now, I think, be difficult to understand how it was that we ran so largely in debt. The more

* This is the only year of this period for which I have the Treasury Report, but the prices of this and the previous one vary so little that the one will exhibit nearly as accurate a view of the trade as the other could do. If it be desired to compare the whole prices of the four years, from 1830 to 1833, they will be found in Hunt's Merchants' Magazine, Vol. VI. p. 474.

produce for which we were *compelled* to seek a market abroad, the less were the prices at which we sold it, and the more cloth and iron we were *compelled* to buy abroad, the higher were their prices—and the difference had to be made up in specie, until banks and individuals were ruined; and in bonds, until we became bankrupt from inability to pay even the interest. Next, the revenue fell off so much from inability to pay for foreign merchandise, that we were compelled to send an agent through Europe, to endeavour to effect a loan for the purpose of maintaining the government in a period of profound peace, and so entirely was our credit destroyed that he found himself unable to borrow even a single dollar.

It will be said that all this was the result of the speculative fever of 1836; but to what was that speculation due? It began as soon as the government had decided that we must abandon the system that enabled men to invest capital in the building of mills and furnaces, and in the opening of mines. Deprived of its natural outlet, capital accumulated unemployed and speculation was then the inevitable result. Population was shut out from mills, furnaces, and mines, and had to seek the West, and with each step in this direction there arose increased necessity for roads, accompanied by a diminution in the power to make them. Government aid was then, as now, solicited, and State bonds were sold, and the greater the sale of bonds the higher became the prices of iron and cloth, and the higher their prices the greater the ability of the British capitalist to buy the bonds, and thus aid in swelling the tide of speculation, until at length the bubble burst and left us to enjoy the comfort of low prices for all the commodities we had to sell,'without reputation abroad to go in debt, even on the security of the Federal Government, the only one that had ever paid off its debts. Of the mills and furnaces of the country, a large portion were silent, and had already passed from the hands of their original owners, who had been ruined, into those of wealthy men who could afford to hold them, waiting for a change of times.

In this state of affairs the tariff of 1842 was passed, and at once there arose a new demand for cloth and iron that we were unable to supply; and now the wealthy speculator was enabled to pay himself for the losses of those who had built the mills and the furnaces that had been stopped, and thus were the rich made richer, as a necessary consequence of the poor having been made poorer. This, however, begot the power to extend the production of iron and of cloth, and manufactures grew rapidly. In four years the product of iron grew from about 200,000 to 850,000 tons, and our consumption kept pace therewith, that of 1846–47 having been above 900,000 tons. It was the period of the great railroad speculation in Europe; and now was seen the disadvantage of dependence on distant markets for even a small supply of so important a commodity as iron. Our whole import in 1845–46 was only 82,000 tons, or about *one-eleventh* of the total consumption, and yet the price of the whole was fixed by the cost of procuring that small quantity from abroad, at a time when British speculation had carried the price of railroad iron up to more than ten pounds per ton. It will be said that now, at least, the consumer paid the duty. Not so, however. But for protection not a furnace would have been built from 1842 to 1846—not a rolling-mill would have been started; and, but for our own furnaces and mills, at what price could we have had 950,000 tons of iron? Is it not clear, that had we been compelled to go abroad in 1846 for even five hundred thousand tons, the price in England would have risen to £20 per ton? Assuredly it is so. If you entertain any doubt of this, I would ask you to look at the facts with regard to other commodities. The additional demand on us to supply the

deficiency of Ireland in 1846, did not amount to two per cent. of our crop of food, and yet it doubled prices throughout the country. An extra demand, at this moment, for one million of barrels of flour would add one-fourth to the value of all grain raised in the year, and add largely to the value of the pork and the beef, the potatoes and the turnips. Seeing these things, is it not clear that domestic competition for the manufacture and sale of iron was what prevented a far greater rise in the British price, and that, therefore, the British ironmaker was the real payer of the duty?

But, you may ask, did the British producer pay also the duty on the cotton and woollen goods that were imported? Did not the high duties of the tariff of 1842 raise prices? For an answer to this question, I will ask you to look at the following prices of cotton goods under the revenue tariff of 1841–42, and the protective one that existed from 1842 to 1846, and satisfy yourself that the British producer of cottons found himself compelled to pay the higher duty out of a smaller gross price, and thus that he, and not the consumer, had to pay the cost of getting his goods to market, precisely as does the farmer of Virginia with his wheat.

In 1841–42 we consumed 260,000 bales of cotton. Five years after we consumed nearly half a million. The supply of cotton cloth in the general market of the world had largely increased under protection, and the consequence was a great reduction of price, as is here shown by the aid of the tables appended to the Treasury Report of 1849–50:—

	Merrimack blue prints.	No. 10 checks.	York coloured cottons.	Drillings.	Chicopee sheetings.	Bartlett long cloths.
1841	13¼	13¼	14	9½	8.62	12
1842	12	12½	12	8¼	7.08	10½
1843	11	11¾	12	7⅞	7.37	10¼
1844	11	13¼	13½	8⅞	8.16	11½
1845	11¾	13¼	13	8½	7.67	10½
1846	11¼	12½	12¾	8¼	8	10

Protection had increased competition for the sale of cotton goods, and competion had reduced prices, and the British producer, compelled to come to our market, was obliged to take the price that was fixed here, and out of that price to pay the transportation, the commissions, and the duty.

In 1842 the duty on coal was twenty per cent., being perhaps sixty cents per ton, and we then imported 141,000 tons. In 1846 the duty was $1.60, and we then imported 156,000 tons. The selling price having remained nearly the same, it is clear that the foreign producer carried back with him just so much less per ton as the duty had been increased—that is, that he had paid the additional duty.

In 1841–42 we consumed about *fifty* millions of pounds of wool. It is somewhat doubtful if it was even so much. Four years after, our consumption exceeded *eighty* millions. The effect of this increase in the supply of woollen cloths in the general market of the world was a universal reduction of price, as may here be seen:—

	Hamilton broadcloth. 4th quality.	6th quality.	Middlesex cassimeres.	Blue satinets.	Andover flannel.	Brown M. de laines.
1841	$2.75	$2.25	$1.70	71c.	27c.	
1842	2.50	1.87½	1.50	62	20	
1843	2.25	1.87½	1.50	52	23	15cts.
1844	2.35	2.00	1.40	70	30	13
1845	2.37	2.00	1.35	70	26	13½
1846	2.25	1.70	1.30	60	24	12

	Cotton and wool linseys, white	Fine carpetings.	Army clothing.
1841	22cts.	70cts.	$2.48
1842	20	65	2.43
1843	20	67½	2.19
1844	20	67½	2.30
1845	24	65	2.22
1846	21	65	2.10

It is clearly obvious that with the increased production the domestic price had greatly fallen, and that the foreign producer was paying *a larger sum in the shape of duty*, out of a *diminished gross receipt*. He, certainly, was here the payer of the duty. If not, who was? Certainly not the consumer, for he was, under a system of efficient protection, obtaining his cloth cheaper than he had ever done. Protection had certainly thrown the payment of the duty on the foreign producer.

Let us abolish protection, and see what will be the result. It will close every woollens mill in the Union, and then we shall need to go abroad for eighty millions of pounds of woollen cloths. What, then, will be the price? Will it not advance rapidly, as the supply is diminished? Unquestionably it will, and the result will be, that while the treasury will receive nothing, the consumer will pay as high a price as formerly.

It is a common idea that prices abroad have a natural tendency to fall, and that they would fall whether we manufactured or not. How far this is correct, may be seen by an examination of the following prices of articles which we do not manufacture, and for which we are wholly dependent upon Europe:—

	Closet locks per doz.	Wrought iron pans per lb.	Vices per lb.	Files, 12 in. per doz.	Hollow wares, discount.
1839	$1.56	7.7	5¾	$3.33	47½ p. ct.
1840	1.36	7.7	5¼	3.33	47½
1841	1.26	7.7	5¼	3.13	47½
1842	1.17	7.7	5¼	3.13	50
1843	1.04	7.7	5¼	3.13	55
1844	1.53	7.7	5¼	3.13	
1845	1.53	8.2	5¼	3.35	50
1846	1.56	8.4	5⅜	3.35	50
1847	1.56	7.7	5¼	3·20	50
1848	1.26	7.7	5¼	3.20	50
1849	1.17	7.2	5¼	3.13	50

Bajou's Paris kid gloves, which from 1839 to 1841 were at 25 francs per dozen, have *advanced* in the period that has since elapsed to 26, 27, and 28 francs, at which latter price they sold in 1850. In the same period there has been no change in silk goods, except as they have varied from the abundance or the scarcity—the low or the high price—of the raw material. An extensive importer of French china informs me, that in the last ten years the reduction of price has not equalled *one per cent. per annum*. Let this be compared with the reduction that has taken place in all the articles which, *by reason of the grant of adequate protection*, are extensively made in this country, and then let it be determined who it is that pays the duty.

In 1843 the export from England of tin plates was 300,000 boxes, at 26*s.* 6*d.* ($6.36) per box. In 1850 it was 800,000 boxes, at 36*s.* ($7.92) per box, for the same quality. Here is an additional charge of $1.56 per box, which upon 800,000 boxes amounts to a tax of $1,250,000, paid by the consumers of tin plates, because of the monopoly power exercised by Great Britain. Late accounts informs us of a large rise in the price, with brisk demand, and tendency to further advance. Would it not be well if some of the advocates

of the British monopoly system should explain why it is that all the articles we cannot or do not manufacture maintain their price, or even rise, while all those we protect, and therefore do manufacture, fall so much in price that they are invariably cheaper under the high duty than they had been under the lower one? That done, they will be enabled to explain to the farmers and planters who it is that really pays the duty, and how much is the true amount of taxation they are now paying for the maintenance of the British system.

Under the tariff of 1842 lead was protected by a duty of three cents per pound, the consequence of which was that the receipts at New Orleans from the West grew from 500,000 to 800,000 pigs, and the price on the Mississippi was generally *less than the duty*. By the tariff of 1846, the duty was reduced to 20 per cent., giving now about three-fourths of a cent, and the consequence is seen in the fact that the receipts at New Orleans have gradually declined until the present year, when they have been only 260,000 pigs, and foreign prices have gone up as is here shown:—

	Total imports.		Total Custom-house value.	Per hundred lbs.
1848–9.	2,684,700	pounds	$ 85,367	3 18
49–50.	36,997,700	"	1,182,597	3 20
50–51.	43,470,200	"	1,517,608	3 49

The real cost of this lead is far greater than this, as every importer seeks as far as possible to diminish the duty. Taking it, however, as it stands on the face of the invoices, it is clear that the only effect of the reduction of duty has been to enable the foreign producer to add to his price far more than the loss to the revenue, and that the consumer of lead has to pay higher prices than he did under the tariff of 1842.

The only circumstance that *can* cause reduction of price is competition, producing an increased supply in the general market of the world; and where that competition does not exist, there is little or no tendency to reduction. Whence is that competition to come? From the countries that have free trade with England—from Ireland, Canada, India, or Portugal? Certainly not. Not only can they not produce, but they are unable even to consume. Whence, then? The answer is to be found in the fact that the only competition with England is to be found in France and Belgium, which maintain protection—in the *Zoll-Verein*, which maintains protection—and in this country, which did for a time grant efficient protection, but now grants that which is inefficient, and calls it revenue duties.

Prior to the establishment of the *Zoll-Verein* the consumption of cotton by Germany was trivial. It is now immense, and rapidly increasing, and she exports her products to every part of the world, *because protection has made them cheap*. Sheffield now complains that, instead of exporting cutlery *to* Germany, she now is *undersold by Germany* in every market of the world. Leeds complains that she is undersold by both Belgium and Germany; and Manchester complains that protected America undersells her even in India. If protection raised prices on the consumer, such things as these could not happen.

It will not now be difficult to see why it was that the country became again prosperous. The foreigner was compelled to sell his goods low, that he might meet the increase of duty, and the domestic market for food, almost destroyed in 1841–42, grew with such rapidity that consumption was gradually overtaking production, and the prices of produce were gradually rising with the diminution in the necessity for going abroad to seek a market, as is here shown in a comparative view of the trade in food of 1841–42 and 1845–46.

Exports of	1841-42. Quantity.	Value.	1845-46. Quantity.	Value.
Beef and Pork, tons.....	51,953	$3,842,041	71,500	$6,358,092
Butter and Cheese, tons.....	2,250	388,185	6,050	1,063,087
Wheat, bushels.....	817,958	916,616	1,613,795	1,681,975
Flour, barrels.....	1,238,602	7,375,356	2,280,476	11,668,669
Corn, bushels.....	600,308	345,150	1,826,068	1,186,663
Corn Meal, barrels.....	209,199	617,817	298,790	945,081
Rye Meal, barrels.....	34,190	124,396	38,530	138,110
Horses, Mules, Biscuits, &c...		954,474		1,556,781
		$14,565,037		$24,598,458

Up to this date there had been no sign of potato-rot, no sign of Irish famine, and the export had increased seventy per cent., and this, too, under a system of protection that was, as we were told, to destroy our commerce with the world. *In the face of crops unexampled in the history of the country*, pork and beef had risen from $74 to $89 per ton; butter and cheese had trebled in quantity, and risen in price from $172 to $175; corn had risen from fifty-seven and a half to sixty-four cents, and corn-meal from $3 to $3.20; while wheat, which had almost doubled in quantity in this brief period, fell from $1.12 to 1.04; and flour from $7 to $5.09.

In the brief period that had elapsed since the passage of the act of 1842, prosperity had been restored. Individuals, corporations, and states had resumed payment, and the credit of the country had been brought again to the point at which it had stood ten years before.

In this state of things it was that the tariff of 1846 was passed. Protective duties imposed upon the consumer, as Mr. Walker said, and as he has but lately repeated, a tax equal to their whole amount; and, in confirmation of this view, he furnished the Senate with a table proving that the cost of coal to the consumer was enhanced by the duty *more than the whole price* at which it was sold, and that of the one hundred dollars at which a ton of nails was sold, no less than ninety-five dollars constituted the tax for the support of the makers of them. The *addition* to the selling price of domestic lead was, as he assured us, three dollars per hundred pounds, and yet the selling price on the Mississippi was generally less than the amount of the duty on the foreign article. At first, little effect was produced. The great railroad speculation kept up the price of iron, and the famine in Ireland did the same for our food, and it was not until 1848 that the change began to be felt. England had been reduced almost to a state of bankruptcy, and the demand for iron had fallen off greatly, the natural consequence of which was a great fall in price, and now the *ad valorem* system began to produce its natural effect. In 1846, thirty per cent. had given little less than $17 on a ton of railroad iron. Prices abroad were then so high that protection was scarcely needed. By 1850, the price had fallen so greatly that thirty per cent. gave only $7, and thus protection disappeared as the necessity for it increased. The effect of this is seen in the fact that the domestic manufacture of that year fell to about 550,000 tons. In this state of things, Congress was urged to restore the duty to the point at which it was fixed by the tariff of 1846, or from sixteen to eighteen dollars per ton, but with no effect, as nearly all the members were in need of the passage of bills for the making of roads, and all desired to have cheap iron. One after another the furnaces of the country were allowed to stop, and the domestic competition for the sale of iron allowed to diminish, until at length the production of the present year has fallen to about one-half of that of 1846—and with this diminution of production we have now an

advance of price in favor of the British ironmaster, who thus puts into his own pocket *more than the whole reduction in the duty.* At the date above referred to (1850) the price of bars in Wales was £4 15*s.* Three months since it had risen to £6, and now every day brings advice of further advance; and what is the tendency of things will be seen on a perusal of the following extracts from the prices-current of the day:

WELSH IRON.—The recent improvement in the demand for iron has led, as was anticipated, to an advance in price, and the makers have succeeded in establishing a rise of 30s. per ton. The whole of the iron works are in full employ, and large orders are on hand, and several of the companies are about to blow more furnaces into blast.

GLASGOW IRON MARKET.—The excitement in our Pig Iron market has been very great during the week, and heavy contracts have been concluded both for cash and open delivery. The upward tendency was rather checked this morning, and a few parcels were forced by timid holders, but as buyers came forward the prices stiffened, the market closing good at 54s. 6d. to 55s. cash, and 55s. 6d. to 56s. three months, open for warrant, free on board. Bars are brisk, and have advanced £3 per ton since July.

The advance in the last three months is here stated to have been £3, or $14.40, and if to this we add the previous one, we shall obtain an amount *little short of the whole duty that was payable under the act of* 1842; and here we have a tax imposed *upon us* for the benefit of British ironmasters substituted for one imposed *upon them* for the benefit of our treasury, and for that of our farmers, who were, under the tariff of 1842, enabled to find a market at the mills, furnaces, and mines of the country, of which they are now deprived.

Had the application, made in 1850, been favourably received, and had the duty been restored to the point at which it was fixed in 1846, the maximum addition to the then existing price of iron could not have exceeded the amount of the additional duty, say eight or ten dollars per ton; and that it could not even have equalled that, you will, I think, readily be satisfied by reflection on the following facts. In 1846, agreeably to Mr. Walker, we possessed furnaces capable of making 850,000 tons, and since that time not only has their number been increased, but the powers of many of them have been greatly enlarged by aid of new and better machinery and modes of operation. It would, therefore, be safe to say that we now possess machinery capable of producing a million of tons, or at least 550,000 tons more than are made in the present year. An addition of eight or ten dollars would not only have maintained all those that were then in blast, but it would have revived those that had stopped, while it would have caused the building of new ones, and our production of 1851 would have been greater than it was by at least 300,000 tons, while that of the present year would be equal to the whole capacity of the machinery, say a million of tons. Now, our whole import has been only as follows:—

1848–49	315,000 tons.
1849–50	375,000 "
1850–51	365,000 "

The domestic production would more than have met the whole demand that has existed, and the British ironmaster, having little or no market here, would have found himself compelled to diminish instead of raising his prices, and the result would have been that an increase of duty amounting to ten dollars would not have given a rise of price of more than seven or eight dollars, with constant tendency to diminution as the making of domestic iron was extended and improved. Nothing, however, was done, and we now have

a demand on the part of the British ironmaster for £3 per ton, or	$14.40
To which must now be added for duty and commission.....	5.00
Making a total increase of.....	$19.40

three-fourths of which is for the benefit of the British ironmaster; whereas an addition of ten dollars for the benefit of our own treasury would not have been attended with an increase of more than..... $8.00

As yet, however, the rise has only begun. The Senate has passed bills granting aid to railroads that will need hundreds of thousands of tons, and when those bills shall come to be acted upon by the House of Representatives, we shall see British iron at £10 per ton, or more than double the price at which it stood in 1850, when Congress refused $10 duty for the maintenance of domestic competition—and then the taxes will stand thus:—

Tax for the benefit of the British ironmaster £5 5*s.* or.....	$26.00
Duty and commission on the excess.....	8.67
	$34.67

And this will be the price paid by the farmer for having failed to recollect that in adopting measures for bringing the loom and anvil to his side he was protecting himself.

The more land Congress appropriates to the making of roads the greater will be the demand for iron, and the higher will be its price. The higher the price, the greater will be the ability of the British ironmaster to take bonds for the taxes he imposes, and the greater the advance in the *fancy prices* of land and lots, the greater the luxury, the greater the demand for foreign commodities, the higher their prices, and the larger the federal revenue—precisely as was the case in 1836—until we end in ruin and have to begin again, as was the case in 1840, '41, and '42.

It will be said, however, that the present high prices will cause the now abandoned furnaces to be again put in blast. Not so. Most of their owners have been ruined, and few have the ability to begin again. Those who have the ability have no confidence in the continuance of existing prices for a time sufficiently long to enable them to repay themselves for the heavy outlay required to enable them to make iron so cheaply as would be required for the maintenance of competition when prices should again fall. That fall would inevitably take place the moment that all the existing iron producing machinery of the Union should be brought into activity, and for the reason that it is capable of producing little short of a million of tons, while the present consumption cannot exceed—domestic.....450,000 to 500,000

foreign.....375,000

Total, tons.....875,000

being about 75,000 tons less than that of 1846, although we have since added several millions to our population, and the consumption should have doubled. Such a production would at once do away with all necessity for importation, and British prices would fall to as low a point as that at which they stood in 1846, and as the duty would fall in the same ratio, there would be a repetition of the ruin of the three past years. Seeing these things, it is quite clear that but a small proportion of the furnaces now closed will again be brought into activity under the present revenue system. The consequence of this must be, that the *wealthy few* who have survived the storm will accumulate large fortunes, while the many who have been ruined will remain impoverished, and the whole body of the population will be taxed for

the benefit of the iron-making aristocracy of Britain and that of a few wealthy men of our own country.

If we require from England, as I presume we shall, half a million of tons per annum for the next six years, the total quantity will be three millions of tons, and the price will probably be £10 per ton. Assuming, however, that it is only £9, the amount will be..... £27,000,000

or about one hundred and thirty millions of dollars. Had the duty been restored in 1850, as before, the British price would not have exceeded £4 15*s.*, and would, probably, have fallen lower. Assuming, however, that it remained undisturbed, we could have bought the same three millions for..... 14,250,000

Difference.....	£12,750,000
Or.....	$61,200,000

Such is the amount of tax for the benefit of British ironmasters that we are likely to pay because of having destroyed domestic competition for the supply of our market with iron.

It will now readily be seen that if we pay for this iron in cotton and tobacco to the extent of the price, or £14,250,000, the iron master can well afford to take our bonds for the amount of his taxes, or sixty millions of dollars, and that if we pay the ordinary price for the lead, tin, cloth, and other commodities that we require, the producers of all of them can afford to take our bonds for as much more, and that thus a debt can now be created in the same manner that was witnessed in 1846, and tending to precisely the same result.

Cheap iron is, however, now the great object with more than half of the members of Congress. How is it to be obtained? By abolishing the duty on railroad iron, says one. By having free trade and direct taxation, says another. Will, however, the abolition of the duty on iron tend to cheapen it? Let us see. The reduction of duty in 1832 was followed by a great rise in the price of iron, that endured until we were almost ruined. The failure to add eight dollars in 1850 has been followed by a rise of price of more than twice eight dollars, and we are promised a much further one. Why such have been the facts has been because the reduction of duty largely diminished the competition for the supply of the world, and we all know that that has always been followed by a rise in prices. Abolish the duty on iron now, and the inevitable effect will be that many of the yet remaining furnaces will be closed, and the competition for the sale of iron will be diminished at the moment when vast grants of land for railroad purposes are tending to a great increase in the competition for the purchase of it. Abolish the duty, and the *advance in the foreign price will, before the lapse of another twelvemonth, be far more than the present duty*—and that advance will be for the benefit of British ironmasters, who will take bonds for the difference between the cost of production and the price at which they sell.

The reduction of the duty on lead has been followed by a rise of price, and if we desire to have it once more cheap, we must change our system. At present, the people of the West are merely scratching the surface, because no one will venture, under existing circumstances, to invest capital in creating machinery for pumping even the most valuable mines. Re-impose the duty of 1842, and capital will at once be supplied, and then we shall have lead cheaper than in any country of the world, and the miners will make a large demand for the grain that now presses on our markets and keeps down prices.

If we desire to have any commodity furnished cheaply, we must adopt measures for stimulating competition for its production; and such was the measure of 1828, under which the foreign price of iron fell from eight pounds to five, leaving the balance of the price to go into our treasury. Such, too, was the measure of 1842, under which we consumed in 1846 almost a million of tons of iron, without permitting our demand on England to have any material effect in increasing her prices, and, under which, had it been permitted to remain in activity, we should now be producing two millions of tons per annum, *and as cheaply as in any country of the world.*

The price at which iron is now shipped in Wales is about £8, and the duty is about $12. The abolition of that duty would be followed by an advance of price equal to its whole amount, and thus cheap iron cannot be looked for in that direction. Were we, however, to look in the opposite direction, we should be sure to find it. A specific duty of $16 on bars, and a corresponding one on all other description of iron, with an understanding that such was the fixed and permanent policy of the government, would in six months from the passage of the law, carry up the manufacture of railroad bars to 200,000 tons, to be doubled before the close of another year, and the total product of iron would in twelve months be at the rate of a million of tons, and prices would fall because of the increased competition of England and the United States for the sale of this commodity. Were the duty this day fixed as is here proposed, it would not add one cent to the domestic price, but would cause a large reduction in the foreign one.

If it be asked why protection is now required, the answer can readily be given. The policy of England has always looked to compelling all the rest of the world to employ themselves in the production of food and the raw materials of clothing, to be carried to her markets, there to be exchanged for cloth and iron, of which she was determined to be the sole producer, and, therefore, prohibited the export of machinery or of artisans to any part of the world. She thus placed herself in a position to defy competition, and would there have remained had not machinery been smuggled abroad, and had not other machinery been made, by aid of which competition was commenced, and everywhere, to a greater or less extent, protected against her. This drove her to the repeal of the laws prohibiting the export of machinery—to the abandonment of her duties on cotton and wool—and ultimately to the adoption of the system called by her free trade, as the only means of maintaining her monopoly, and compelling the planters and farmers of the world to make all their exchanges in her single market, in which she fixed for herself the prices of all she desired to buy and all she desired to sell. Until after the close of the war in Europe, our attention had never been drawn to the necessity for bringing the plough and the loom into connection with each other. Until then, we had gone on sending away all the products of the land, and exhausting it and its owner, because the waste of European wars had made a market for our own products at prices so high as to offer some apparent compensation for the deterioration of the powers of the soil from which it had been produced. That market closed with the close of the war, which had found us totally unprovided with any of the means of producing among ourselves either cloth or iron. We had given little heed to Mr. JEFFERSON'S suggestion that "British commerce and manufactures in the mass were in the end to gain by breaking down the competition of ours in our own market;" and since then there have been but two periods, of only four years each, in which we have made any serious effort to protect our farmers and

planters in their efforts to follow the advice of ADAM SMITH in bringing the artisan to his natural place by the side of the food and the wool, that he might eat the one while converting the other into cloth that might cheaply be carried to the most distant market. From 1828 to 1832 that protection was afforded, and the manufacture of iron made rapid progress, but from 1833 to 1842 it went down, and the people who had built furnaces were ruined. Again the effort was made, and iron grew from 1842 to 1846 from 200,000 to 850,000 tons; but again the idea of protection was abandoned, and again the makers of iron were ruined; the effects of which are seen in the fact that hundreds of furnaces are closed, and the production has fallen to half the quantity at which it had arrived six years since, and *that our consumption is less now than it was in* 1846, *although the population has grown more than* 20 *per cent.* During all this time the manufacture of iron in England has gone on steadily to improve. It has had no fits or starts like those that have been experienced here. It has, at times, been unprofitable, because of the necessity for underworking and destroying the manufactures of other nations; but that necessity has led steadily toward the cheapening of the processes of production, while, during three-fourths of the time, our iron-men have been compelled to struggle for mere existence, even when not ruined and rendered unable to struggle longer. A steady continuance of the protection first afforded by the tariff of 1828 would, before this time, have given us an iron manufacture amounting to millions of tons, and we should now have a home market for all the food and most of the cotton that is now raised. Other manufactures have been exposed to similar trials, and the only real cause existing for surprise is found in the fact, that under such circumstances they should have advanced as far as they have done.

A great contest is now being carried on for the control of the manufactures and commerce of the world. Great Britain desires to prevent any other nation from obtaining the machinery needed for the production of either iron or cloth, and to that end are all her movements directed, while France, Belgium, Germany, and Russia are equally determined to put an end to the monopoly and thus to enable their people to make their exchanges at home. Unlike them, our policy is vacillating. We hesitate to declare our belief that in resistance to monopoly is to be found the true road to freedom of trade, and yet if we study the history of the cotton, the woollen, or the iron trade, we shall find abundant evidence that such is the fact. At present our farmers make the mass of their exchanges at home, because even yet they are to some extent protected in their efforts to have the loom and the anvil by the side of their ploughs and their harrows. It is, however, declared that our true policy looks to the abolition of all duties, and yet English journalists rejoice in assuring their readers, that "without a higher tariff" than the present, "the manufactures of America cannot exist under competition with England," and that "the simple question" now to be determined is "whether manufactures shall cease or not." Under such circumstances, with the sword of Damocles always over their heads, and with the sheriff so frequently in their furnaces and mills, what chance is there for improvement in their modes of operation? But little, certainly!

In another letter, I will submit some further facts in reference to this important question, to which I will ask your attention. Meanwhile, I remain,

Yours, very respectfully,

HENRY C. CAREY.

Burlington, November 12, 1852.

REMARKABLE YIELD OF BUTTER.

THE following statement of the produce in butter of five cows was made to the Essex Agricultural Society in 1825, by Col. Jesse Putnam of Danvers, Mass., who took the highest premium offered by the Society:

"My farm is situated in Danvers, and consists of about one hundred acres. My whole stock of cows is eight, all of the common native breed. From these I selected five, for the purpose of ascertaining the quantity of butter that could be made in the time above mentioned. They were kept and fed through the season separate from the other stock, and their milk was entirely used for the making of butter. During the last winter my cows were fed on barley straw, salt hay, corn fodder, fresh meadow hay, with some of the common flat turnips. They were thus fed on coarse and cheap fodder until about the 10th of March, after which they were fed with English hay, and received about one pint of Indian corn, on the ears, a day, to each cow, until about the middle of May. From this time they fed in the pasture, and through the whole season, in addition to the feed there obtained, received between four and five quarts of Indian meal per day for each cow. In September, when the feed of the pastures was nearly dried up, they were fed with the suckers of about two and a half acres of Indian corn; after this, for a number of weeks, they received about one bushel of mangel wurtzel to a cow, a day—one half in the morning, the other at night. These are all the kinds of food they have received, and the quantities are stated as near as they could be ascertained.

"The season in this vicinity has been uncommonly dry and warm. In consequence, common pasture land has yielded much less feed than usual. This was peculiarly the case with my pastures, which are a light, gravelly soil, of ordinary quality. And for the same reason my fall feed, or the feed from my mowing lands, after the first crop was taken off, was much less than usual. The extreme warmth of the weather was very unfavorable for the making of butter, some part of the time, as will be seen from a comparison of the products in different weeks. As to the quality of the butter, I can only say that my customers always expressed themselves entirely satisfied with it, and cheerfully gave the highest market price through the season.

"The following is the quantity of butter furnished the market from these five cows, in the several weeks as numbered, commencing June 1st, and ending October 31st:

1st week,	50¼ lbs.	12th week,	35½ lbs.
2d "	48 "	13th "	38½ "
3d "	47 "	14th "	38½ "
4th "	43¼ "	15th "	41 "
5th "	38¾ "	16th "	40¾ "
6th "	31¾ "	17th "	45½ "
7th "	35½ "	18th "	45 "
8th "	35 "	19th "	38 "
9th "	36½ "	20th "	38½ "
10th "	37½ "	21st "	37½ "
11th "	37½ "	22d "	41 "

"The whole amount in the above time is 881 lbs., being more than 8 lbs. per week for each cow.

"I have also kept an account of the produce of these cows in the month of November, and find the same to have been 157¼ lbs.—making a total in six months, from five cows, of 1038½ lbs., or 208 lbs. to a cow nearly.

"JESSE PUTNAM."

NATIONAL AGRICULTURE.

We find the following credited to an *exchange*. It is well worth consideration:

The total value of the annual products of the soil of the United States is now about one thousand millions of dollars; and no one who knows what science *has done* for Agriculture, will doubt that the same amount of labor which is now employed in producing this aggregate, might be so applied as to secure a total produce thirty per cent. greater, or one thousand three hundred millions. But scientific, skilful, thorough agriculture, always employs more labor than the shiftless, slouching sort too generally prevalent; and it is certainly within bounds to estimate that our agriculture might be so improved as, by the help of additional labor now unemployed and unproductive, to give an additional product of fifty per cent., or five hundred millions per annum—an achievement which would double the wealth of the country every eight or ten years. Whoever will carefully review the agriculture of a single State, or even an average county, in any part of the Union, and estimate how much its product might be enhanced by irrigation, manuring, deep-ploughing, draining, &c., will perceive that our calculation is far within the truth.

But suppose that only half of it, or an addition of two hundred and fifty millions per annum to our annual agriculture product, is attainable, what an immense addition to our national wealth would thereby be insured! Four fifths of this would probably be permanently added to the wealth of the country; that is, the farmer, whose annual product should be swelled from $1,000 to $1,250, or from $2,200 to $2,500, would not eat or drink up the surplus, but would invest the greater part of it in new buildings, fences, barns, implements, furniture, &c., &c., giving profitable employment to mechanics and laborers, and largely increasing the business of merchants and the incomes of professional men. Such an addition to the annual product of our agriculture would increase the consumption of manufactures, domestic and imported, in far greater ratio, since from the annual product of every farm the food of those making a living on it must be first taken for home use, affording no business or profit to any one else, leaving only the surplus to form the staple of trade; and an addition of twenty-five per cent. to the annual product of each farm would probably double the annual exchanges and general trade of the country.

This addition may speedily be made, through the diffusion of science and knowledge. There is hardly a township wherein vast elements of fertility are not now lying useless or running to waste, which might profitably be secured and applied. And, while individual and local effort must mainly be relied on to forward this, as all other improvements and reforms, it seems but reasonable that the Federal Government should do a little—the very little that is asked of it—toward the accomplishment of the good work. A National Bureau of Agriculture, costing at the outside $100,000 per annum in all, might procure seeds, plants, trees, &c., from India, Australia, the Pacific, &c., which would naturalize the tea shrub or tree among us, determine what American soil and climate are best adapted to it, and supply us after a few years with a home-grown article, probably cheaper, and certainly more wholesome (because unadulterated) than the Chinese leaf. Beet sugar is rapidly supplanting, in Europe, that produced from the cane, though the latter is sold

far cheaper there than it ever was till very recently; our prairies and intervales are naturally better adapted to beet culture than most of the lands devoted to it in Europe. In fruit culture we have done nothing as yet to what we must and will do; there are scores of delicious fruits well adapted to one or more of our climates, which are hardly known among us even by name. Many a farmer now possesses treasures in marl or muck, plaster or phosphate, of which he is utterly ignorant, and likely to remain so. We all need light; but agriculture does not keep pace with other departments of productive industry in improvement, primarily because it has not received equal attention from those capable of shedding the light of science upon its onward way.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE POULTRY.

At this season of the year, when every preparation should be made for the comfort of all domestic animals, the comforts of the poultry family should receive a very liberal share of attention, inasmuch as there is no stock, that any stockholder can keep, that will pay so well for the capital and labor invested as biped tribes.

To insure the best returns during the winter months, the season when they can be made more profitable than in any other, it is necessary, in the first place, that they should be provided with warm and dry shelter; in the second, that they should have a constant supply of good nutritive food. If this last is given in quantities to lie by them, no waste will follow, and consequently no additional expense will accrue. We have been in the habit, during the cold season, of keeping a box of grain, where hens, &c., could have access to it at any time; and have found to our satisfaction that they can be wintered on a less amount of food in this way than when they are allowed to ramble for it, or it is doled out to them in handfuls, at seasons of convenience. By keeping corn in a good supply within their reach, we have marketed it at more than a dollar a bushel, when the common price was seventy cents, taking pay in eggs, which in winter always turn to cash at a fair price, and have sold them other grains at the increased ratio.

Yet we would by no means confine their living to grain, especially that in a whole or uncooked condition. Meat, the refuse of the table, or from the butchers, may be given them to good advantage. It should, however, be boiled, in order to being more digestible. Cooked potatoes, given warm, for an occasional change, we have found highly beneficial; also, meal, cooked or boiled in just water enough to give it a consistency.

We always allow lime in good quantities to lie in our hen-house. The importance of this in the formation of the shells is fully known; aside from this, its healthfulness as a condiment may be fully inferred from the manner in which they devour it. A neighbor of ours, who is nice in hen matters, a few years since finished off a room in comfortable style for their winter accommodation, lathing and plastering the sides and overhead. They had scarcely inhabited the tenement six months before the plastering was all devoured. The lime and sand were both probably the cause of this; and had both been placed in abundance within their reach, the wall would no doubt have remained untouched. Ashes or fine dry earth should also be placed within their reach, that they may allow their wallowing propensities in winter as they so naturally do in summer.

The poultry-house should also be in a quiet, retired place. Noise and the

interference of other animals is very annoying to all the feathered tribes, especially to those of domesticated habits.

Fowls should not be allowed to ramble in winter, especially if the day is cold or stormy; and in such days, if they are let out at all, it should be near night-fall, when they will be sure to return soon.

In the arrangement of the poultry-house, special regard should be paid to *saving the manure.* This is the true guano, which every farmer may possess, in moderate quantities, to be sure, but which is none the less valuable. Its actual value is beginning to be better understood than formerly, but not so well now but that many farmers allow their poultry to roost on fences and trees, where it is all lost; while many more, who save it through the winter, sell it for a mere pittance, or give it to their more discerning neighbor for clearing out the hen-roost. Now we positively believe that a bushel of hen manure is cheap to the farmer at a shilling, in any currency that may be reckoned where these remarks are read. In proof of it we give the result of some experiments made in its application.

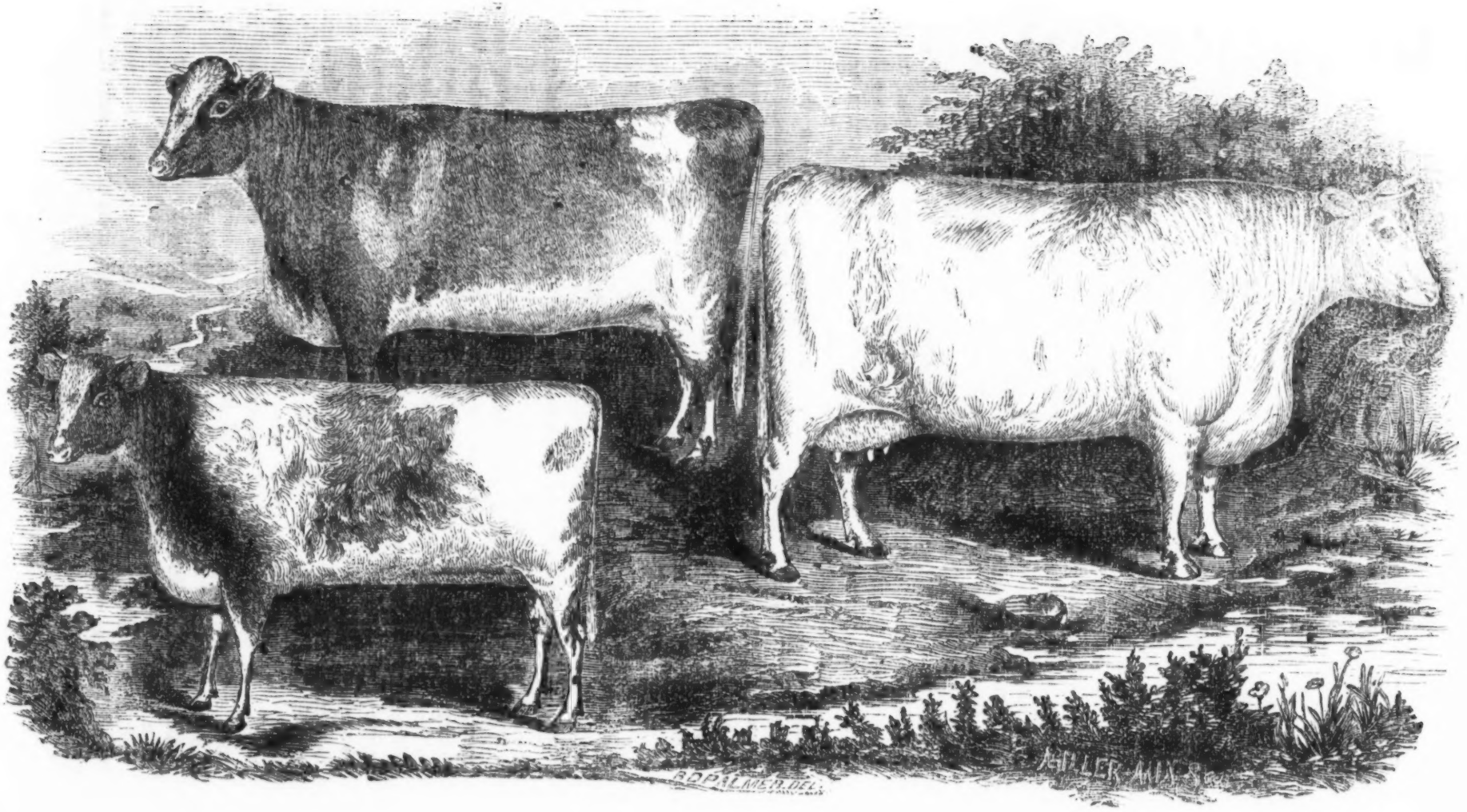
A farmer of our acquaintance pulverized, by threshing with a common flail, a quantity of it; after which he added an equal quantity of ashes, and one fourth as much gypsum. A single handful of this compound was placed in a hill for corn; the result was, a heavier crop than where well-rotted stable manure was placed in liberal quantities. The same compound we have found valuable for peppers, tomatoes, vines, and indeed all garden vegetables; it gives them a quick, healthful growth. And this same compound, sown on turnips, vines, and other plants infested by insects in the early stages of growth, when the leaves are wet, is sure to rid them of these annoyances. But we have said enough to show its value, and here we leave it for the farmer to carry out its application to such crops and in such ways as he sees best. W. B.

Elmwood, Mass., Nov. 15th, 1852.

GRAFTING EVERGREENS.

Downing's *Horticulturist* contains the following useful information on the subject named in the above title:

The French nurserymen are very successful in grafting evergreens, and practise it as follows: "The proper time for grafting pines, is when the young shoots have made about three quarters of their length, and are still so herbaceous as to break like a shoot of asparagus. The shoot of the stock is then broken off about two inches below its terminal bud; the leaves are stripped off from 20 to 24 lines down from the extremity, leaving, however, two pairs of leaves opposite and close to the upper end of the shoot so headed back—which leaves are of great importance for drawing up the sap. The shoot or stock is then split to the depth of two inches, with a very thin knife, between the two pairs of leaves left; the scion is then prepared, the lower part being stripped of its leaves to the length of two inches, and is then cut to a wedge and inserted in the ordinary mode of cleft grafting. The graft is tied with a strip of woollen, and a cap of paper is fastened to a stake, and firmly fixed over the whole graft, to protect it from the sun and rain. At the end of fifteen days this cap is removed, and the ligature at the end of a month." Some evergreens, grafted in this way, make a second growth of five or six inches the first year, but most sorts do not start till the next year.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PORTRAIT OF S. P. CHAPMAN'S SHORT-HORN PRIZE HEIFERS—HILPA IV., RUBY II., DUCHESS.

These fine heifers, with three of Mr. Chapman's cows, Ruby, Charlotte, and Daisy III., were exhibited at the show of the New-York State Agricultural Society, held at Rochester, in 1851, and won the first prize *collectively* as "the three best cows over three years of age, and the three best heifers under three years of age, owned by one person." The sketches of these heifers were taken soon after that exhibition. The past year, we are assured, has much improved the appearance of the animals.

At the late State Fair held at Utica, these heifers were again exhibited. Duchess won the second prize for short-horn cows, being herself *but three years old*, and competing with aged cows. Ruby II. won the first prize for two year short-horn heifers, and Hilpa IV. the first prize for yearling short-horn heifers. At the show of the Madison County Agricultural Society, held in September last, these heifers were awarded the same prizes as at the State Fair at Utica, viz.: Duchess the second for cows, (Mr. Chapman's Ruby winning the first,) Ruby II. the first, and Hilpa IV. the first, for heifers of their respective ages.

Their pedigrees we give below:

PEDIGREES.

Duchess.—White, bred by S. P. Chapman; calved 25th June, 1849; got by the imported bull Duke of Wellington, 55, [3654,] bred by the late Thomas Bates, Esq., of Kirklevington, Yorkshire, Eng.; dam [Matilda] by White Jacket [5647]; g. d. [Hart] bred by, and imported by the late Thomas Hollis, formerly of Blythe, Yorkshire, Eng. Duchess is an excellent milker.

Ruby II.—Roan, bred by S. P. Chapman; calved 27th May, 1850; got by Buena Vista, dam [Ruby] by the Bates bull Symmetry, 166, g. d. [Willey III.] by Mars, gr. g. d. [Young Willey] by York, gr. gr. g. d. [Old Willey] imported.—[*See Am. Rd. Book, p.* 238.]

Ruby was awarded the first prize at the show of the New-York State Agricultural Society, held at Albany, in 1850, in class of "milch cows." She gave during that season, in eighty successive days, over *four thousand pounds of milk;* her feed grass only. Nineteen pounds of her milk gave one of butter.

Hilpa IV.—Roan, bred by George Vail, Esq., of Troy, N. Y.; calved 9th April, 1851; got by the imported Bates bull Duke of Wellington, 55, [3654,] dam the imported Bates cow, [Hilpa,] by the Duchess. Bates bull, Cleveland Lad, [3407,] g. d. [Hawkey,] by Red Rose Bull, [2493,] gr. g. d. [Hart] by Rex, [1375,] gr. gr. g. d. bred by Mr. Richardson, of Hart, Durham, Eng., from an old and celebrated milking tribe of short-horns.

HOW TO PRESERVE MANURE.

We clip the following from an article copied into the papers from some unknown source. Farmers will do well to heed the advice:

Waiving remarks on the laws of nature requiring a deeply and finely pulverized soil for another article, we will, in this, consider *manures* as furnishing food for plants. From repeated experiments it is ascertained that

the stale of animals contains a great amount of nutriment, or food, for plants; that similar effects are produced by applying the droppings of poultry (guano), animal manure (blood and offal of slaughter-yards), &c., &c. Much of the value of these is liable to be lost by putrefaction and evaporation. By chemistry we ascertain what this is, and how to retain it. It is well known, that in cleaning horse stables, especially under the floor, there is a very pungent smell. The same is true in opening a heap of stable manure that has been thrown up and heated. This smell is produced by the escape of ammonia, which is the essence and value of the manure. The loss is greater from privies, because their contents are still richer, and more highly charged with fertilizing gases. How to retain these, and to fix them in a state in which they will remain until used by the growing plants, is a question of high importance, which a *scientific* knowledge of these elements alone can answer. An English writer says: "Before you begin to clean out your stable, dissolve some common salt in water, if a four-horse stable, say four pounds of salt dissolved in two buckets of water, and poured through the nose of a water-pot over the stable floor, an hour or so before you begin to move the manure, and the volatile salts of ammonia will become fixed salts, from their having united with the muriatic acid of the common salt; and the soda, thus liberated from the salt, will quickly absorb carbonic acid forming carbonate of soda."

MECHANICS—THE GREAT BORER.

We are happy in giving to our readers some information in reference to that giant among machines, the borer, now at work upon the very substance of the Hoosic mountains. We should be glad to present diagrams, to illustrate, more clearly than is possible otherwise, some of the details of its mechanism; but without them, we think it may be pleasing and instructive to show the principles which are involved, and the general plan or mode of its action. In doing this, we shall have occasion, in some instances, to use statements made elsewhere, in some of the journals of the day, though correcting them in several very important particulars. We need not say that these corrections are made upon the very best authority, for otherwise we should not presume even to affirm, and still less to deny, in reference to any of these statements, whether of facts or of opinions.

The entire weight of the machine is about ninety tons, and its cost, at the shop where it was made, about $12,000. An amount nearly equal to this has also been expended in conveying it to the mountain, and preparing it for action. It stands upon four huge wheels, which rest upon rails ten feet apart. A large hollow shaft extends the entire length of the machine, through the centre, in which and around which wheels and levers are adjusted, by which a proper operation is to be secured; which shaft, turned by a stationary steam-engine, gives motion to an immense wheel, attached to its extreme end by many bars and arms of iron. The diameter of this wheel is twenty-four feet, and the rim of it is of immense strength and solidity. The dimension of this wheel is to be the size of the tunnel. This shaft extending lengthwise between the rails, the face of the wheel, and not its edge, is presented by a front view.

The arrangements for cutting into the rock are next to be stated, and are of chief importance. At four different and equally distant places from each

other, there are projections from the outer rim of the great wheel, of solid iron, most firmly attached to the wheel, each four feet in length and six feet in depth. In each of these projections or wings, three revolving cutters are so arranged as to trace lines about one inch apart, or more accurately, the distance between the inner and outer circles traced by these cutters is thirteen inches.

When the whole machine is in motion, these circular cutters are pressed directly against the rock, by the action of screws, with an immense power, the whole machine being stayed by lateral props to prevent its retrogression. Each revolution of the shaft or wheel throws the cutters, and the whole moving part of the machine indeed, from one sixteenth to one half of an inch forward, according to the hardness of the rock to be excavated; and it is obvious that either the rock must be ground to powder by the action of the cutters thus forced against it, or the machinery itself must be torn to pieces.

There is also, at the centre of the shaft, a drill, somewhat of the form of an auger, projecting about five feet from the face of the wheel, cutting into the rock, of course, about a foot further than the cutters before described. By the action of wheels, this drill is made to strike forward with great force into the rock, instantly receding and projecting again some twenty or thirty times at every revolution of the big wheel, while the auger formation, or grooves, on the end of the drill, removes from the hold the pulverized stone.

When the cutters and drill have entered four feet, the machine is to be withdrawn, the powder is inserted in the centre, and the blasting succeeds. The rubbish of broken rock being removed, a smooth cylinder of four feet additional depth is made to the tunnel, when another operation is to follow.

This machine is an attempt to apply to tunnelling what is known as Wilson's Patent Stone Cutters, which have been several years in successful operation in the dressing of granite, freestone, &c. It is a new application of an established principle. Under these circumstances, it would be very unreasonable to expect that a new machine could be invented and put to work, which should not require alterations suggested by experience. At least, this has always been anticipated by the parties interested, and the result has shown that their expectations were well founded.

They commenced under great disadvantages, and these disadvantages have had to be overcome step by step. Among the difficulties are the following:—Several hundred feet of rock and earth excavation have got to be made before entering the mountain. For the purpose of testing the experiment, the machine is placed against a portion of this rock, which is not sufficiently high to form a strong arch over the machine. It has been found that in blasting out the core, after the rim is cut twenty-four feet in diameter, the blast throws off both the core and the arch over it, besides loosening the stone, which falls while the machine is operating. This has caused a good deal of delay. This difficulty will be obviated when they get into the mountain.

Another difficulty was that the machine had to start upon an artificial foundation, and had to be braced against wooden timbers fitted for the purpose. These could not be made so secure as to prevent oscillation, which prevented the cutters from doing their full work. This difficulty has been obviated in part by the fore wheels of the machine having got on to the rock which it has cut, which affords a solid foundation, and the means of bracing against the rock. Another difficulty to overcome was, that the cutters were

set too angling, in consequence of which the oscillation of the machine caused the edges to crumble. Various experiments have been tried to learn the best working point in all these matters, and if the progress has been slow, the parties concerned feel that it has been sure. Various kinds of steel, with different degrees of temper, have had to undergo a thorough test, until the kind which will do the work has been at length found. This is the great point gained. Repeated experiments have been made, when the cutters have progressed at the rate of fifteen to twenty inches per hour, and never less than twelve inches per hour. This fact being established, all other parts are collateral. They can be altered, strengthened, and adapted, as necessity and experience shall suggest.

There are still alterations to be made which will cause delay. One is, the stocks attached to the wings which extend from the large wheel and hold the cutters against the rock. The present ones are made of cast iron, and it is proposed to make new ones of wrought iron. Certain bolts require to be changed, which have caused much difficulty on account of the unscrewing of nuts by which they were secured. The machine runs upon bars of railroad iron, and its great weight causes them to bend. New and larger ones, made for the purpose, must also be procured.

It must be recollected that this is, to all intents and purposes, a model machine; no smaller one having been built to experiment with and improve upon, as is usual in such cases. There are ten cutters on the machine, and each one has been experimented with separately, until its proper position and temper have been ascertained. The object of the operators, therefore, has not been to see how far or how fast they could advance, but, before doing this, to perfect the various parts. As yet they have seen nothing to discourage, but much to encourage the idea of its accomplishing what they proposed.

When it is recollected that the machine shop is in this city, and the machine 125 miles distant, it must be seen that the work of altering and adapting must be slow. These explanations are given, that those interested may know some of the reasons for delay.

Yards are being established all over the country for the purpose of introducing "stone-cutting machines." Eight of them are in operation in New-York city, dressing freestone; and the average work of each machine from the commencement has been 225 square feet per day. A day's work for a man, to dress the same kind of stone, is from ten to twelve square feet per day, each of ten hours. Of Quincy granite, an average day's work for one man is five square feet, while Wilson's cutting machine dresses over 100 square feet in the same time. Facts like these have given rise to the belief that the same principle can be applied to tunnelling, with the same relative gain over the old mode of hand-drilling.

We expect, by and by, not only to give more satisfactory information concerning the success of this experiment, but to add, also, a more particular account of its structure.

The rock thus far encountered is a mica slate, with veins of hard quartz; and this is probably more destructive to the cutters and drill than if it were solid quartz.

DEEP PLOUGHING.

We find the following statement in *The Country Gentleman*. It confirms what we have written on this subject:

"The present season of severe drought has most distinctly illustrated the

benefits of deep ploughing. We planted a quantity of apple seeds on ground which was last autumn an old pasture, and which was inverted with a double Michigan plough of the largest size, drawn by three yoke of oxen, to the depth of eleven and a half inches actual average measurement. On such soils as this, as commonly ploughed, apple seedlings usually suffer by drought; but the present severe season they have continued growing, without the least check, through the whole summer, and are now much larger than usual under ordinary treatment.

The *Granite Farmer* states that fields tilled only to the depth of six or seven inches have suffered severely, while on others side by side the crops do not feel the drought at all. In one place was a field of corn, of a yellowish green, and with leaves rolled by thirst; while separated only by a single step was another portion, at least a foot taller, with a deep-green, broad, and uncurled leaf. Yet the manure was the same, the seed the same, and the culture the same. On asking an explanation, he learned that this was the result of the first experiment in subsoil ploughing."

HOW INCREASING POPULATION GIVES VALUE TO LAND.

In our last, we asked the attention of our readers to the fact that, for want of local demand for labor, the waste of it was necessarily very great, as might be seen by any and every of them on a survey of his own neighborhood. So enormous is this waste throughout the country, resulting from the absence of power so to combine together, that we feel quite safe in reckoning it at five times more in value than our whole exports to every part of the world; and yet that constitutes but a part of the loss inflicted on our people by the system known as British free trade. The manure of England is valued at a hundred millions of pounds sterling, being far more than is yielded by our crops of cotton, tobacco, rice, and naval stores, the products of all that large portion of our population living south of Virginia and Kentucky; and yet nearly the whole of the vast crop of manure produced throughout the country is wasted. Here is another great loss resulting from the absence of the power to bring the loom and the anvil to the side of the plough and the harrow; and yet, great as it is, it forms but a small portion of the great total. Our farmers and planters are every where compelled to cultivate only those few articles that can go to distant markets, and throughout a large portion of the Union a proper succession of crops is entirely unknown; whereas, in England, where a market is made on the land for the products of the land, green and white crops alternate with each other, and the soil is improved instead of being exhausted. Further, thousands of things are wasted that would, under a different system, add largely to the farmer's returns, and to his power to improve his farm, or to purchase the products of his neighbors. When men come together and combine their efforts, almost every thing that comes from the land acquires a value, and therefore it is that land increases so much in price, and that the land-owner becomes rich where population becomes more dense. In illustration of this, we give the following curious article, in which it is seen that science has enabled the people of Europe to obtain the most delightful odors from the most disagreeable substances, that till lately were entirely valueless:

Sources of Perfumes.—Whether any perfumed lady would be disconcerted at learning the sources of her perfumes, each lady must decide for

herself; but it seems that Mr. De la Rue and Dr. Hoffman, in their capacities as jurors of the Great Exhibition, have made terrible havoc among the perfumery. They have found that many of the scents, said to be procured from flowers and fruits, are really produced from any thing but flowery sources; the perfumers are chemists enough to know that similar odors may be often produced from dissimilar substances, and if the half-crown bottle of perfume really has the required odor, the perfumer does not expect to be asked what kind of odor was emitted by the substance whence the perfume was obtained. Now, Dr. Lyon Playfair, in his summary of the jury investigation above alluded to, broadly tells us that these primary odors are often most unbearable. "A peculiarly fœtid oil, termed fusel oil, is formed in making brandy and whiskey; this fusel oil, distilled with sulphuric acid and acetate of potash, gives the oil of pears. The oil of apples is made from the same fusel oil, by distillation with sulphuric acid and bichromate of potash. The oil of pine-apples is obtained from a product of the action of putrid cheese on sugar, or by making a soap with butter, and distilling it with alcohol and sulphuric acid; and is now largely employed in England in making pine-apple ale. Oil of grapes and oil of cognac, used to impart the flavor of French cognac to British brandy, are little else than fusel oil. The artificial oil of bitter almonds, now so largely employed in perfuming soap, and for flavoring confectionery, is prepared by the action of nitric acid on the fœtid oils of gas-tar. Many a fair forehead is damped with *eau de millefleurs*, without knowing that its essential ingredient is derived from the drainage of cow-houses." In all such cases as these, the chemical science involved is, really, of a high order, and the perfume produced is a *bonâ fide* perfume, not one whit less sterling than if produced from fruits and flowers. The only question is one of commercial honesty, in giving a name no longer applicable, and charging too highly for a cheaply produced scent. The mode of saving a penny is chemically right, but commercially wrong.—*Dickens's "Household Words."*

PEACH TREES.

While our correspondents are discussing sundry matters connected with the cultivation of the peach, the following statements from Mr. Downing and Prof. Johnston may be of interest to our readers:

"For a hundred years the peach flourished without care, and full of health, from the mouth of the Chesapeake to the Connecticut river, and produced an apparently exhaustless abundance of fruit. But about 1800, attention was drawn, around Philadelphia, to the sudden decay and death of the orchards, without known cause. The fatality spread through Delaware into New-Jersey, where, in 1814, many of the orchards were entirely destroyed. Some years later, it appeared on the banks of the Hudson, thence spread north into Connecticut, and is now slowly but surely extending along the rich soils of Western New-York, towards the great centre of the peach cultivation of the States, on the Ohio and Mississippi rivers."

"In the peach orchards," says Johnston, "a thoughtless exhausting culture was carried on, as if the soil would never tire of yielding; the unpruned trees were encouraged to yield their annual loads of most abundant fruit; and whenever it was possible, a constant cropping of the space between the trees hastened the wearing out of the overtasked land. The trees themselves,

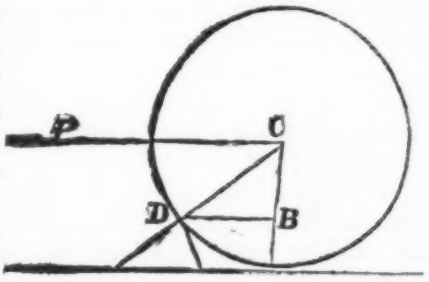
as the land became less rich, diminished in vigor, and an enfeebled progeny arose, which disease, in some form, was sure to attack."

There is a great similarity between the progress of the wheat failure, caused by the attacks of the midge, and that of the peach orchards above described. The injury, in both cases, is first done to the soil, and a sure return to a better state of things can only be made by renovating the soil itself, and by a more prudent and skilful subsequent cultivation.

The yellows the learned Professor describes as peculiar not only to the peach, but to North America, which for thirty years has killed off the trees by thousands, while nothing is known of its cause or cure. Where it prevails, the trees should be cut down, the land "unorcharded," and tilled for some years, and then healthy young trees planted in their stead. He thinks the disease contagious, and certainly propagated by budding or grafting from a diseased tree.

THE MECHANICS OF FARM WORK.

We have illustrated the following principles, in former numbers:—1. That the line of traction should be in the line of motion, and that any departure from this involves a loss of power, in proportion to the angle formed by the lines of motion and of traction; that large axes are preferable to small ones, so far as friction is concerned, while the size is not important in relation to its effect upon the quantity of motion induced by a given power. We have also referred, in a general manner, to the resistance of obstacles, and to the most economical application of power in overcoming them. But a change of the direction of the motive power in such cases is, of course, impracticable; and we now recur to that subject, for further illustration. In the diagram in the margin we find the combined force of gravity and of horizontal motion pressing in the direction C D, against the obstacle at D. Gravity acts in the direction of C B, and, by the principles of similar triangles, which we need not explain here, is measured by the short lever-arm, B D. The power, P, acts in the direction of C P, and is measured by the lever-arm, C B. The power will balance the weight, when the weight × D B equals the power × B C.



By enlarging the diameter of the wheel, *the line of traction remaining horizontal, or parallel to the plane*, the given power becomes more effective. This is obvious, from a glance at the diagram; for C B will increase as the radius of the wheel increases, while B D is comparatively unchanged. *The centre of gravity*, in a carriage of two wheels, should be near the axle. If elevated far above it, in descending, it will, in effect, be brought forward, and bear heavily upon the thills or the "tongue," as will be evident by suspending a plumb line from it; while, in ascending plains, it will fall behind the wheels, and cause the cart to tip backward, and thus become unmanageable.

IN CARRIAGES OF FOUR WHEELS,

other considerations demand attention. If the weight of the load bears chiefly on the hind wheels, the line of traction may become indirect, causing a loss

of power. The pressure of the entire weight on either pair of wheels, may also result in pressing them into the earth. Experiments on this point were tried by Sir Henry Parnell, which resulted as follows:—1. Half a ton of stone was placed in the centre, between the axles, and drawn over a platform of timber, perfectly horizontal. To effect this, required a tractive power of 50¾ lbs.

2. A ton of stone was placed, one half over each axletree; and this required a motive power of 70 lbs.

3. One and a half tons were distributed equally over both axles; and this required a tractive power of 90 lbs.

OF SPRINGS.

The adaptation of springs deserves consideration in this connection. It will generally be found true, that whatever arrangement adds to the ease of the rider, promotes also the comfort of the horse. Look, for example, at the effect of springs, when obstacles are encountered. In the diagram just referred to, if an obstacle is encountered at D, the whole load, if it rest on the axle, must be raised a perpendicular distance equal to the height of the obstacle; and this may require a great amount of power, when applied horizontally. But if the load rest on springs, admitting sufficient vibration, all that is required is to lift the *wheels and axle*, and to overcome the power of the spring, without raising the load. Hence, in our pleasure carriages, if the wheel encounters a stone, the rider scarcely feels it; the bending of the spring is substituted for the lifting up the carriage and its contents. On streets paved with round stones, unequal in size and uneven in surface, or where the stones are pressed below their proper level, this is not always a matter of theory merely, but one of practical importance. We doubt not that it would be wise to suspend all our drays and farm carriages on springs. The cost is trifling, and would be more than compensated by a longer wear; while the inconveniences may be less than they are imagined.

OF WHIFFLETREES.

What we have already advanced points out the proper position of this mechanism; but there is another point, of practical value, not generally regarded—its shape. This is often a greater or less arc of a circle. A diagram will at once show the mistake involved in this. The two arms become unequal in length, and occasion also an indirect line of traction. If the arc *a c b* should swing into the position *d c e*, *d c* virtually becomes longer than *c e*; and both the results just described are necessarily involved. If you draw lines representing the direction of the draft, from the extremities of each arc *d* and *e*, with other lines at right angles to these which pass through the pivot or centre of the whiffletrees, the unequal length of the two parts of that which is in an oblique position will be perfectly obvious. This form of the instrument is just as unphilosophical as it would be to construct it originally with its two arms of unequal length.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE LAWS OF HYGIENE.—No. III.

BY JOHN B. NEWMAN, M. D.

In the two preceding articles, I have endeavored to call attention to the importance of obeying the laws of hygiene, and to show that there are laws that have stood the test of thousands of years, and whose details are constantly verified and improving. It is no small object gained, if skepticism is removed in regard to the value of medical science. After-confidence then becomes easy and sure. Taking for granted that this has been effected, I shall, after giving the formula on which the laws are based, go on directly with their practical applications in the trades and business.

The proofs and details of physiology would not be appropriate in this place. In describing the organs, engravings are indispensable, and many of these must be colored to give proper views of the interior structures. For all this I refer to the "Principles of Physiology." As plainly and clearly as I could write, and sufficiently illustrated, the book gives the reasons of the laws of hygiene, and the great doctrines of life and death.

An English writer some years since remarked, that there was "a great difference between *believing* a thing and *being convinced* of it." The real truth contained in this seeming paradox comes home to the experience of us all. No sane man will swallow arsenic, inhale carbonic acid gas, immerse his limbs in boiling water, or tie his feet together as a preparative for racing. He not only believes, but is likewise convinced of the pernicious consequences. Yet the same man will indulge in habits pernicious to health, and unhesitatingly bind himself in invisible fetters,—believing, to be sure, that such doings are wrong, but, as his conduct shows, not convinced that they are so. Let this same man really study the subject, its proofs and details, and he becomes interested and reformed. Not only are his own habits changed, but, as far as lies in his power, those of his neighbors also. It is conviction that makes the convert, and it makes a zealous one. Going on board of a steamboat lately, a gentleman, who was walking ahead of me and smoking, offered his cigar case to a friend who had just joined him. "Help yourself." "Thank you, but I have given it up." "How so?" "Jones began reading about tobacco, and not only gave it up, but lectured all his neighbors but one into doing the same. I expect the refractory one will follow suit soon, as his wife is enlisted against him, and he is reading Jones's books." Was as much attention paid to diet, bathing and ventilation, the results would be equally apparent. It is hoped Mr. Jones did not confine his apostleship solely to tobacco.

But to return to our formula. Life is a forced state, and can only be supported by constant stimulation. It has been aptly compared to a flame. If the stimulus is too intense, it burns with unpleasant brightness, and soon wears out; if too weak, it burns dimly, and, without useful result, languidly expires. We must either wear out or rust out. There is no alternative in this world. It is here that the laws of hygiene come in play, and direct how to obtain the true medium, by which the greatest results can be secured at the smallest expense—the most flame with the least fuel.

The life-power, or that principle which regulates form, nutrition and development, is the same, in essence, in plants, the lower animals, and man. The

sunlight, pure air, proper food and exercise, are equally indispensable to all. When man has studied the laws that regulate the economy of the lower races, he has obtained much knowledge that he can apply to himself. And the reverse holds true: the more he learns respecting himself, the more able he is to direct that treatment that shall cause the inhabitants of his garden, his stable, and his field to flourish. Nothing in nature is isolated; a common chain binds the whole.

Our first application of hygiene will be to the farmer. He of all the workers among men can command most easily the conditions of health, light, air, food, and exercise. Despite these advantages, the average mortality among farmers is, out of all proportion, greater than it should be, and is utterly inexcusable. This may generally be ascribed to two causes—improper food and neglect of bathing.

Farmers, as a class, use too much salt meat, especially pork. This inordinate use of swine's flesh is a main cause of the scrofula so prevalent in the country. The term scrofula comes from a word meaning swine; and this shows, of itself, that the matter has been long understood. Tubercular consumption cannot affect a person who is not scrofulous. In this unfortunate peculiarity of constitution, the power of reaction against disease is in a great measure lost. What would be only a slight cold in another, may terminate in consumption with him. More exposed to the action of injurious agents, he has less stamina to resist and recover from their influence; and hence, even in the most favored positions, rarely enjoys a moderate degree of health. While there is life there is hope, and a chance of obviating, in a great measure, this peculiarity; and the disuse of swine's flesh, in any form, is a good beginning.

Persons can subsist upon much less meat than they often suppose. For the hardest worker, once a day is quite sufficient; and this, if possible, should be fresh. It is easy enough for the farmer to keep up a good supply of poultry. A little care bestowed upon rabbits would be richly repaid. Ponds can be stocked with fish at a trifling expense, and these will eat the refuse of the table, which other animals would reject; and thus variety and economy are both combined. It may be well to remark that, in eating flesh and fish, all the grease should be avoided.

Wheat, rye, Indian corn and buckwheat secure all desirable variety in the bread and cake line. Even in these, however, there is much abuse. The habitual use of fine flour insures costiveness. Nature, to guard against this, provides the grains with husks, from which they should not be separated after grinding, but all made into bread and eaten together, as was designed. Here, as in almost every other instance, the economical plan is the most healthy one.

The less preparation and so-called refining that is given to vegetable products, the better. Brown sugar is more healthy than white, and good molasses or maple sugar more healthy than either. Both white and black children and adults, in the South, grow fat and hearty on the juice of the sugar-cane; when the same amount of the prepared article would cause sickness, and perhaps death.

Fruits should always be upon the table at every meal; and it has been shown that the farmer, by due care, can keep up a good supply all the year round. The orchard should be carefully looked after. Some attention bestowed upon the bushes which bear berries would more than repay; and nothing is easier than securing an abundance of grapes: the vines shelter the arbors, and greedily and thankfully receive the soap-suds after washing.

Coffee and tea should never be drank without a plentiful addition of milk and sugar. Nuts, &c., should never be eaten between meals, or on going to bed: they are best as a dessert, directly after dinner.

And now as to bathing. A great part of the farmer's work is very dirty; he becomes incrusted with particles of soil all over his body, and yet thinks it sufficient to wash face and hands at meal times, and let the rest of the body go. And this goes on from week to week; and what wonder that there is trouble?

Early one morning, last summer, while passing a farmer's house, he requested me to come in and give him some advice. He complained of headache, variable appetite, costiveness, and much trouble about the bladder and kidneys. His pulse was fast and irritable, but full, and his tongue slightly furred. I asked if he had not itching sensations about the skin. "I am always scratching," said he, "and find no relief, even when I draw blood." "That is enough: let us go and look at the bed you slept in last night; you will find your imprint on the sheets." We both went, and found it was as I stated. I then explained to him the danger of keeping his skin in such a filthy state. He had so incrusted it with dirt as to shut up the pores, and even irritate them: in consequence, the lungs and kidneys were forced to do double duty. He ate much salt meat, and that disordered the stomach, which by sympathy caused the headache. Nature pointed out the means of cure by the itching skin, which sought to be cleansed and relieved. "Now," said I, "order a tub of water to be brought into the barn; pour in boiling water until the whole is lukewarm; have also a second tub brought in, cold as it comes from the well. Undress, and get into the first, and lather with soap, and wash until you are perfectly clean. Rinse with the water in the second tub, and dry with a coarse towel, rubbing steadily, from head to feet, until in a glow. Then dress in clean clothes, walk a mile in the sun and back again. Wait an hour before eating, and let your breakfast be sweetened weak black tea and bread and butter. Work moderately, eat a light dinner, bathe again in cold water, and walk before supper. Try this plan for two days, and then come and see me." He followed the advice implicitly, came at the appointed time, and informed me that he felt like another person. At first, the cold water was repugnant; but, in the course of a few weeks, it became an indispensable luxury. His family and laborers adopted the hygiene diet and bathing, and it has cost them nothing for doctor's bills this summer.

Besides cleansing the skin, and keeping its functions in order, another great advantage is secured by the use of the cold bath, in shielding the system from changes of temperature in varying weather. A drenching rain is then merely an additional bath; and the hardened bather laughs at the thought of taking cold. In winter, his morning bath gives him the advantage of an additional overcoat during the day, and he dreads the cold as little as the rain. The effect on the skin, especially the exposed portions, is astonishing; the browning and reddening is much less; the rude, rough visage is replaced by the robust, manly countenance, indicative of health and energy: so that this practice may commend itself to young men, on the score of good looks alone.

The farmer's house should be built on rising ground, with a slight slope on every side. The dwelling-house is much better without cellars; but these, if made, used only for storage, and never finished off as kitchens. It should not be shaded so much but that the sun, in its course during the day, may shine into every part of it. The sunbeam is a powerful preservative against miasma. It has often been noticed that in seasons of plague and cholera, the pestilence visited every house on the shady side of a street, but left those on the sunny

side unnoticed. The sleeping rooms should never be below the second story. The sashes of the windows should always be so adjusted as to slide down from the top; so that, if ventilation is otherwise neglected, a sure means is hereby provided. Don't fear the night air; it is much better than none. A large, open garret, on the old-fashioned plan, adds much to the health and convenience of every house.

ASHES AS MANURE.

Wm. P. Bedell, of Coxsackie, inquires the best way to apply wood ashes to soils, "and on what kinds of vegetation it is most beneficial—the quantity necessary—when to be used, and the value per bushel to the purchaser."

We have much theory, and very little accurate experiment, on the application of ashes as manure. Theory is of great value, or rather it becomes so when submitted to the test of varied, repeated, and rigidly accurate trial, in connection with weighing and measuring. Guess-work and vague estimate may satisfy the experimenter, but not the public. For these reasons we are unable to give our correspondent much definite information on the subject.

Ashes are generally most useful on soils which have long been cultivated; because, as they are the mineral portion of plants, they supply the deficiency which has been caused by long cropping. Sometimes, however, new land is much benefited, where the soil is naturally deficient in some of the constituents of ashes. Analysis may assist in pointing out such deficiency; experiment is an excellent mode of determining. Ashes will be beneficial to all crops on soils which lack its ingredients: the inquiry should therefore be, on what *soils*, rather than for what *crops*, is it most useful?

The quantity to apply, it is obvious, must also depend on the condition of the soil: it is not usual, however, to give a dressing of more than a *few* hundred bushels per acre. (?) An analysis of the soil might exhibit the degree of deficiency, from which a calculation could be made of the amount needed by a growing crop; but such a calculation could only be regarded as a guide or illumination to experiment—the latter, carefully conducted, being the final test.

A good time for the application is in autumn, the moisture dissolving the soluble parts, which become well diffused through the soil before vegetation commences in spring. The time of year is not a matter of great moment, unless very large quantities are used.—*Ex.*

MENEELYS' BELL FOUNDRY AT WEST TROY.

Persons having occasion to pass a little time in the city of Troy, should by all means cross over the river to West Troy, if for no other reason than to visit the extensive bell foundry of Andrew Meneely's Sons, which is here located. The Meneelys are distinguished the world over for the manufacture of bells; and while we are writing this article, our ears, as well as the ears of tens of thousands of others, are listening to their fame, in the deep-toned sounds of the great City Hall bell, which is tolling the departure of the lamented Daniel Webster.

The establishment of the Meneelys employs upwards of thirty men; and up to January last, they had cast and sold 8,274 bells, averaging 634 lbs.

each, and making a total of 5,245,716 lbs. of metal. These bells have been sold in all parts of the United States, the Canadas, West Indies, four on the island of St. Helena, seven in China, and a number in Mexico. Within a short time past, two have been forwarded to Oregon, two to Minnesota, three to California, six to Canada, one to St. John's in New-Brunswick, and two to Cuba. The two to Cuba were given away, and hardly a week passes that some liberal-minded person does not give away a bell costing from $100 to $1,200. We have just seen an article from the *Albany Journal*, stating that the Meneelys are now constructing *a peal of ten bells*, to cost $4,000, which Joseph S. Fay, Esq., presents to an Episcopal church in Savannah, Georgia.

It would be almost impossible to go into any part of the world without *hearing* the fame of Meneelys' bells proclaimed from some steeple, cupola, plantation, factory, college, academy, school-house, steamboat, ship-yard, court-house, or city hall; for the sun never sets upon their noise. They are *ringing* on every side of the globe! The Meneelys enjoy the reputation of being good mechanics, enterprising and upright citizens; and in the manufacture of bells, they are supposed to be without a superior in the wide world.

LIVE AND DEAD WEIGHT OF CATTLE.

We cut the following from the *Wool Grower and Stock Register*:

Salesmen commonly calculate that the dead weight is one half of what the animal weighs when alive; *but the butcher knows that the produce is* GREATER: it often approaches to three fifths; and by an extensive stock bailiff of the late Mr. Curwen, it was found that the dead weight amounted to fifty-five per cent. of the live. But the amount differs strangely, as may be seen by the following statement of Mr. Ferguson, of Woodhill, C. W.:

	Live Weight.		Dead Weight.		Tallow.	
	St.	*lbs.*	*St.*	*lbs.*	*St.*	*lbs.*
Aberdeenshire ox, ...	132	11	84	6	16	5
Short-horned ox, ...	132	0	90	1	14	0
Short-horned heifer, ..	120	4	77	9	15	8
Short-horned steer, ...	120	5	67	7	14	12

The subject of live and dead weight of cattle being one that deeply interests farmers, we again call attention to the subject, in the hope that it may awaken inquiry as to the question, what should be the rule of paying the farmer for the beef he may have grown? It costs him quite as much to grow hide and tallow as it does muscle or flesh, and we should like to know why he should not be paid for so doing?—*Ed. Amer. Farmer.*

In continuation of this subject, we make the following extracts from Colman's Massachusetts Report:

In New-York, only four quarters are made by the slaughterer, and the hide and tallow are not weighed or reckoned in the price: facts which are to be remembered in making comparisons of prices in the different markets.

The following are some examples of live and dead weights of New-England cattle, killed at home, and after being driven from the Connecticut river to Brighton, the Boston beef market, a distance of 75 or 80 miles:

Example 1.—One ox, live weight in market, 2,393 lbs.; quarters weighed 418 lbs., 415 lbs., 324 lbs., 331 lbs.: hide, 150 lbs.; tallow, 173 lbs.=1,811. Difference, 582 lbs.

Example 2.—Two oxen of A. S., killed at home, weighed as follows:

Live—one 1,979 lbs.	Killed, 1,400 lbs.
" 1,910 "	" 1,341 "

About 294. lbs. loss on a hundred of the live weight.

Example 3.—An ox owned by A. S., conveyed to Brighton on a sled, weighed at home about 2,630 lbs.; the precise number of pounds not recollected. On being slaughtered his weight was as follows:—quarters, 480 lbs., 479 lbs., 374 lbs., 383 lbs.; tallow, 250 lbs. Total, 2,120 lbs. Loss, 510 lbs.

Example 4.—Ox belonging to R. D.; when he left Connecticut river, weighed 2,435 lbs. Weight at Brighton when dressed, 1,588 lbs. Loss of weight, 867 lbs. This is a little more than one third, and is a remarkable result.

Example 5.—An ox weighing on Connecticut river 2,250 lbs. weighed in market, 1,472 lbs. Loss, 778 lbs.

Example 6.—An ox, weighing as above, 2,255 lbs., weighed in market 1,487 lbs. Loss 768 lbs.

Example 7.—A fat bull of D. S., killed at home, weighed alive 1,495 lbs.; dead, 1,051. Loss, 444 lbs.

Example 8.—A fat heifer of E. W., killed at home, weighed alive 1,120 lbs.; dead, 832 lbs. Loss, 288 lbs.

Example 9.—An ox belonging to S. C., weighed on Connecticut river, alive, 2,590 lbs.; at Brighton, dressed, as follows:—quarters, 394 lbs., 350 lbs., 362 lbs., 358 lbs.; hide, 120 lbs.; tallow, 207 lbs. Total, 1,791 lbs. Difference between live and dead weights, 799 lbs.

Example 10.—An ox belonging to S. C., weighed alive 2,345 lbs.; at Brighton, dressed, as follows:—quarters, 352 lbs., 310 lbs., 364 lbs., 308 lbs.; hide, 115 lbs.; tallow, 217 lbs. Total, 1,666 lbs. Difference between live and dead weights, 679 lbs.

WHEAT CROP IN MICHIGAN—RESULTS OF DEEP PLOUGHING.

One of the editors of the *Michigan Farmer* writes as follows:

The wheat crop came in good throughout our State. Corn will be a middling crop; the seed, owing to carelessness in sowing, failed to vegetate at the first planting last spring, and the crop is backward. Where proper care was taken to gather seed early and keep it dry, no trouble has been experienced. Grass and oats are light—potatoes, also.

Such a season as this affords a thorough test of the great advantage of deep and thorough, over shallow culture. The difference in favor of the former practice is truly astonishing. On a recent visit to the farm of Linus Cone, Esq., of Oakland county, who is noted for his practice of deep ploughing and subsoiling, he took us over a meadow from which he had just taken the hay, and seldom have we seen such a growth of grass. An acre was left standing for seed, and we should judge there was over three tons upon it. He had taken from the five acres cut 30 loads, of usual size, of cured hay. It was not what would be considered in New-England good grass land, lying on the slope from a high ridge, and is naturally a heavy soil. The great yield was the result of *deep* ploughing, thorough culture and drainage. A neighbor's field, much more favorably situated, yielded about a ton to the acre.

He uniform ly gets good crops. Since he commenced the practice of deep ploughing and draining, he says the seasons are always good. His wheat is free from rust and insects, and he never suffers from drought or flood.

PLOUGHS SHOULD PULVERIZE THE SOIL.

Mr. Peter Love, an English farmer of considerable distinction, has written a letter to the *Mark Lane Express*, in which he makes the following excellent remarks on the action of ploughs in reference to the purpose alluded to. He says:

"If it be the fact that the primary object of cultivation for the production of the various agricultural crops, is a well-pulverized soil and porous subsoil, then the farmers ought to draw out the ingenuity of our agricultural mechanics, by giving prizes for those ploughs that will invert without smoothing and smearing the under strata, and most effectually pulverize the greatest quantity of land a given depth with the least amount of power, instead, as the present practice is by all our agricultural societies, of awarding prizes to those ploughs that cut out a furrow with all three of its cut sides well smoothed and smeared up, and turned over in as unbroken a state as possible, so that it will shine from one end to the other, like a well-moulded piece of concrete, and the bottom of the furrow well polished over by the friction of a broad-soled landside and rest, thus rendering the under strata almost impervious to air or water.

If we could have a plough so made that it would, in the act of inverting the furrow-slice, break it into pieces, and pass over the bottom of the furrow without the friction of any smooth surface of iron or other material being drawn over, closing up all the pores and fissures in the under strata, I think there is little doubt but such a plough's cultivation would approach (when performed at equal depths) fork cultivation.

There are a great many of the best farmers who are of opinion that it is a great advantage to have the furrows turned as completely over as possible. But the great evil is that when the plough is set to turn the furrow so, the solid furrows require so much harrowing to prepare the land for the dibble or the drill; but such would not be the case if we had ploughs that in the act of turning over the furrow would well crack, rend, and break it, and completely invert it, and cut it up from the under strata without smoothing the bottom of the furrow, closing all the pores and fissures thereof."

THE ECONOMY OF EVERGREENS.

We have long held the opinon, says the *Albany Cultivator*, that the character and morals of a rural community are necessarily improved by that most interesting of all kinds of rural embellishment, ornamental planting. But for those who cannot appreciate these advantages, we shall present another view of the subject—the saving in dollars and cents. This the writer has had an opportunity of witnessing the present winter in his own case. Nine years ago, finding a serious inconvenience from the sweep of winter tempests, to which his residence was much exposed, a large portion of evergreens were mingled with the trees and shrubbery, then newly set out. About a dozen white pines, as many American arborvitæ, and a few balsams, white spruce, Norway firs, and hemlocks, were placed, so far as practicable, on those sides of the house the most exposed, regard being had at the same time to the exclusion of uninteresting points of view. One rule was adopted in removing the young evergreens, which were chiefly procured from the borders of woods, and which in some instances were brought twenty miles. This was, to take up

enough earth on the roots to preserve the tree upright against strong winds, after setting out. By this means not one out of some thirty or forty was lost by removal. A white pine, then about three feet high and an inch in diameter, is now eighteen feet high and six inches in diameter, and several others have made nearly an equal growth.

Now, for the *economy* of this plantation, which some of the neighbors thought was entirely useless labor. It has saved, the present winter, by the protection it affords against storm and wind, at least *ten dollars* in fire-wood, and this amount saved is increasing every year as the trees advance in growth. The cost of procuring the evergreens is about *three* dollars. What farmer, who goes only for "utility," can show as large a percentage of profit in wheat raising, or making pork? Whose children would be most likely to seek the tavern, grog-shop, and theatre, those who enjoy a home made attractive and beautiful, or those whose home is bald, bleak, and repulsive, from a total want of this cheapest and most natural of all means for its embellishment?

REGULARITY IN FEEDING SHEEP.

An able writer says: "If there is one rule which may be considered more imperative than any other in sheep husbandry, it is that the utmost regularity be preserved in feeding. First, there should be regularity as to the *times* of feeding. However abundantly provided for, when a flock are foddered sometimes at one hour and sometimes at another—sometimes three times a day, and sometimes twice—some days grain and some days none—*they cannot be made to thrive.* They will do far better on *inferior keep*, if fed with strict regularity. In a climate where they require hay three times a day, the best times for feeding are about sunrise in the morning, at noon, and an hour *before dark* at night. Unlike cattle and horses, sheep do not eat well *in the dark*, and therefore they should have time to consume their feed before night sets in. Noon is the common time for feeding grain or roots, and is the best time if but two fodderings of hay are given. If the sheep receive hay three times, it is not a matter of much consequence with which feeding the grain is given, only that the practice be uniform.

It is also highly essential that there be regularity preserved in the *amount* fed. The consumption of hay will, it is true, depend much upon the weather. The keener the cold, the more sheep will eat. In the South much would also depend upon the amount of grass obtained. In many places a light daily foddering would suffice; in others, a light foddering placed in the depository racks once in two days would answer the purpose. In the steady cold weather of the North, the shepherd readily learns to determine about how much hay will be consumed before the next foddering time. And this is the amount which should, as near as may be, be *regularly* fed. In feeding grain or roots there is no difficulty in preserving *entire regularity*, and it is vastly more important than in feeding hay. Of the latter a sheep will not overeat and surfeit itself; of the former it will. And if not fed grain to the point of surfeiting, but still over-plenteously, it will expect a like amount at the next feeding, and failing to receive it, will pine for it and manifest uneasiness. The effect of such irregularity on the stomach and system of *any* animal is bad; and the sheep suffers more from it than any other animal. I would much rather that my flock receive no grain at all, than that they receive it without regard to regularity in the amount. The shepherd should be required to

measure out the grain to sheep in all instances—instead of *guessing* it out—and to measure it to each separate flock.

Until two or three weeks preceding lambing, it is only necessary that breeding ewes, like other store-sheep, be kept in good plump ordinary condition. Nor are any separate arrangements necessary for them, after that period, in a climate where they obtain sufficient succulent food to provide for a proper secretion of milk. In backward seasons in the North, where the grass does not start prior to the lambing time, careful flock-masters feed their ewes chopped roots, or roots mixed with oat or pea meal. This is, in my judgment, excellent economy. For the effect of the various esculents on the quantity and quality of the milk, see Liebig's Animal Chemistry."

Unless sheep have access to succulent food or clean snow, water is indispensable. *Constant* access to a brook or spring is best, but in default of this, they should be watered, at least *once a day*, in some other way.—*Randall.*

JOHN C. CALHOUN, HENRY CLAY, DANIEL WEBSTER.

We scarcely needed "A Sermon delivered in St. Stephen's Church, Baltimore, by Rev. Dr. M'Jilton, on occasion of the death of Henry Clay," which has been sent to us, to remind us of him, or of the other great men whose names stand as our caption. "There were giants in those days," and we are almost inclined to adopt the hyperbolical language of Mr. Hillard, in Faneuil Hall, spoken in reference to the last named of the three: "The shadow of him we have lost is more than the living forms of all who are left." These three men have stood side by side for many years in the highest places, and though differing in opinions, and contending for hostile policies, neither was thereby less great. None have been so high intellectually as to cast a shadow over either of them. In reference to the last, we are told by the London *Times* that we exaggerate his qualities, which in Europe would have failed to secure for him any especial preëminence. It matters little what the opinion of the *Times* may be on any subject, if for no other reason than because it may say to-morrow the opposite of what it said yesterday. But light always shines: mighty power judiciously applied always produces results. "By their fruits ye shall know them." With this scale of measurement, and going back to the early years in the public life of Webster, when a Canning, a Brougham, a Peel, a Russell, and the Iron Duke have occupied the high places in England, and point out the page which indicates a mightier intellect than the speech of Webster on the Greek Resolution, his Reply to General Hayne, his addresses on Bunker Hill and in Faneuil Hall, &c., &c.

We well remember when these same organs, led on by Sir Walter Scott in his two ponderous volumes on Napoleon, contended that greatness in *action* was a lower order of greatness than that purely intellectual. And no doubt this often is true. The power to inspire an army with enthusiasm in the midst of balls and bombs, and to run the most tremendous hazards, is of a lower kind than that which secures the attention of a congregation of careful thinkers, and induces them to abandon long-cherished projects. But in practical and manly statesmanship, Mr. Webster has ever proved equal to the emergency. His treaties with England are evidence of this, in one of which, at least, he proved rather too much even for British diplomacy. Whether he could force opium down the throats of the poor Chinese, or cure "by free trade" the miseries of Ireland, is, to be sure, a different matter. We don't believe he would ever have tried either. English statesmen were successful

in the former, while the parties referred to would perhaps prefer to have the present condition and future history of Ireland written by themselves rather than by opponents or by rivals, or even by third parties.

Mr. Calhoun's powers were chiefly employed in the advocacy of measures of present and temporary interest, rather than in the enforcement of general principles, of permanent and universal application. Hence the interest connected with them was liable to vanish with the circumstances of the occasion, and his efforts, however great, would not always be remembered.

Mr. Clay was unlike both of these, and probably had more of what is called *popular talent* than either. More excitable than Mr. Webster, less impetuous than Mr. Calhoun, he secured the sympathies of the masses, and held them spell-bound at his will. For half a century, Mr. Clay was one of the most prominent men in the country, and during much of this time he was the leader of the political party to which he belonged, and in every position he has taken he has shown himself great among the great. He was a national statesman: above local jealousies and local interests, he aimed constantly for the good of the whole. In this, he and Mr. Webster were alike eminent.

But we need not enlarge. To write biographies we have not the time, nor the requisite material. But we would add our own to the millions of voices that commend the unsurpassed intellectual power of all these, and the principles of political economy, as affecting our domestic industry, which were advocated by Clay and Webster, and which must stand or fall as the arguments with which they urged attention to them are heeded or are neglected.

CURRANTS AND GOOSEBERRIES.

It is to be presumed that not one in a hundred understands the simple process of cultivating either currants or gooseberries, although it has been detailed in all the horticultural books with which the world abounds. Thousands of persons, with every appliance for success, are still content to live without a plentiful supply of these delicious, healthy, and cheap luxuries, merely because they have not thought of the matter. They have a few stinted bushes set in the grass, with three fourths of the stocks dead, and then wonder why they do not bear in abundance.

There is not a more beautiful shrub growing than the currant, properly propagated; and the same may be said of the gooseberry. Cultivators who pay any attention to the subject, never allow the root to make but one stock, or, as the English say, "make them stand on one leg"—thus forming a beautiful miniature tree.

To do this, you must take sprouts of last year's growth, and cut out all the eyes, or buds, in the wood, leaving only two or three at the top; then push them about half the length of the cutting into mellow ground, where they will root, and run up a single stock, forming a beautiful and symmetrical head. If you wish it higher, cut the eyes out again the second year. I have one six feet high. This places your fruit out of the way of hens, and prevents the gooseberry from mildewing, which often happens when the fruit lies on or near the ground, and is shaded by a superabundance of leaves and sprouts. It changes an unsightly bush, which cumbers and disfigures your garden, into an ornamental dwarf tree. The fruit is larger, and ripens better, and will last on the bushes, by growing in perfection, until late in the fall.

The mass of people suppose that the roots make out from the lower buds. It is not so: they start from between the bark and wood, at the place where it was cut from the parent root.—*Vermont Chronicle.*

GYPSUM.

This mineral is of more especial value, from the fact that it may be applied to so many uses. In reading the interesting little volume, "Eagle Pass," noticed among our new books in our last number, we find mention made of it in a manner that well illustrates this value. In visiting the house of a neighbor, in those (to us) distant regions, near Fort Duncan, the writer admired the remarkable elegance of the plastering, and on inquiry she found it to be made of gypsum, a mine of which had been discovered in that neighborhood, and its material used, after such preparation only as was in the power of the pioneer in those wild regions, where the fine arts are not often in great demand. But we see no reason why it should not be extensively used for this purpose, wherever it abounds, and especially when distant from a desirable market, it being not only more elegant but more durable than lime. Some mines furnish as handsome specimens as if made from the best marble; and minute pulverization is the only process necessary to prepare it for a manure, or for the use above named.

Gypsum, or sulphate of lime, differs from the carbonate of lime (marble) in this respect: when heated, it retains its acid, while the carbonate is decomposed by the process.

Gypsum is widely diffused, and, in some localities, is found in immense quantities. Near Windsor, at the mouth of the St. Croix, and on the Avon, these rivers are distinguished by lofty cliffs of this mineral. The undulating appearance of that region of country is attributed, in a great degree, to the numerous swallow holes and sinkings, which have been produced through a gradual solution and removal, by surface water or by springs, of the gypsum from beneath. So in the Cumberland basin, in some parts of New-Brunswick, and along the upper beds of the Onondaga salt group, and the base of the Helderberg limestone in Western New-York. At Cape Desmoiselles, up and down the river, are cliffs of gypsum, eighty and one hundred feet high. In New-Brunswick, on the Salmon river, quarries and swallow pits occur. The surface here is described as abounding in sinks and pits, like round artificial wells, from one to twelve feet deep. "One great hollow rim seems to encircle the area over which were spread these smaller ponds and pits, intermixed with ravines and cliffs, caused by the pits falling or merging into one another. While portions of the deposit were being dissolved out, in detail, and carried off through the porous wells, the whole area was sinking in a mass, destined, no doubt, in time, to become one of those extensive ponds or swallows, such as I had previously seen on the rich land east of the Amherst marshes, and in the country above Windsor in Nova Scotia." In this last-named place, it is the chief article of export, being carried in its rough state into Maine and elsewhere, thereby avoiding the duties laid upon the importation of manufactured articles.

Whether gypsum is a *fertilizer*, or only an *ameliorator*, seems to be questioned. But the fact is abundantly shown that it tends, when properly applied, to improve the growth of various crops. In New-Brunswick, the farmers do not avail themselves very extensively of this mineral. Some experiments there seem to exhibit no proofs of marked effects, while in other instances, oats and grass have received very decided benefit. In one instance, it is reported to have produced a crop of clover where none had before been seen. In Maryland, the application of a bushel to an acre is said to have produced wonderful effects; and in Pennsylvania and New-

York, its application has been productive of good on limestone soils. In New-Brunswick are found, growing upon the pure gypsum, young and healthy trees, as well as large and old cypress trees and white birches, with some firs, of a luxuriant growth.

FARMERS' WORK IN DECEMBER.

Examine your manure heaps, and if not fermenting, shovel them over in moderate weather, or pour into them hot water, or hot weak lye, through openings made by a crowbar. A little unslacked lime thrown in may also be beneficial. Add water to the heap, if dry.

Gather more leaves for the compost heap, and use them first as bedding for your cattle.

Plough clayey lands, if not too much frozen, and thus expose the soil to the wholesome action of the frost.

SUGAR FROM INDIAN CORN AND OIL OF VITRIOL.

The New York *Sun* says:

A patent has been granted at Washington for a process of making sugar out of corn, which, though familiar to all chemists, is doubtless novel to most readers. A quantity of corn meal is placed in a boiler, to which is added nearly an equal quantity, by measure, of water, together with a small proportion of common oil of vitriol, or sulphuric acid. The mixture is then boiled at a very high temperature, when common brown sugar is produced, held in solution, of course, with the acid. A quantity of common chalk is now thrown in, which has the effect to remove the vitriol from the sugar, the vitriol uniting with the chalk, and falling with it as sediment to the bottom of the boiler. The liquid sugar is then drained off into another vessel, boiled down to molasses, and finally crystallized and clarified in the usual manner. We imagine that an operating apparatus placed in the World's Fair, and turning out lumps of sugar made of corn and vitriol, would have made the "rest of mankind" conclude that the Yankees had a compact with the witches, or some other supernatural power. The patentee of this process is Mr. George Riley of this city.

Sugar may be produced, in the same manner, from common starch, corn stalks, and other fibrous substances. The process affords a fine example of what chemists call catalysis. Though sugar is produced, yet the nature and strength of the vitriol is not a whit altered, neither is the original quantity diminished. The same vitriol would, therefore, suffice to convert an indefinite amount of meal into sugar.

We hope the day is not far distant when more attention will be paid to the subject of chemistry, as a branch of education, than it now receives in most of our common schools. Though the process above described seems wonderful, it is no more strange than the phenomena presented by the combustion of a tallow candle. How few know that a burning candle is, in effect, a gas-light, the melted tallow, or carbon, being raised by capillary attraction to the centre of the flame, which, being hollow, forms a retort wherein the tallow is subjected to an immense heat, and thus converted into illuminating gas, in precisely the same manner as the carbon in the huge retorts at the gas manufactory is turned into gas.

EFFECTS OF EXTREME COLD ON VEGETATION.

In connection with what we present to our readers elsewhere, upon the effect of climate on our peach trees, we give below a judicious article from the *New-England Farmer*, on the effects of extreme cold on vegetation generrally. We also invite the attention of correspondents to this subject. It would be a good service to publish the observations of farmers, gardeners, &c., in different sections of the country :

Reports from various parts of the country establish the fact that the severe cold of the late winter has proved destructive to many fruit trees and plants. When we say *the severe cold*, we do not mean to declare that it was the *intensity* of the cold in itself that has proved so fatal, for that we do not pretend to know. The question still remains an open one, and demands the careful investigation of those best able to settle it.

Is it the *intensity* of cold that has killed the trees and plants ?

It is said that the tree becomes frozen so hard that the sap vessels are burst, and that causes its death. There are not many winters in New-England so mild but that the trees are all frozen so solid that logs from them may be split almost by a single blow of an axe from an athletic arm. But this does not seem to have been a sufficient condensation of cold to injure trees, or we should have lost them all. If they could not withstand this degree of freezing, they would soon become extinct. They not only withstand the lowest temperature that occurs in this latitude, say from sixteen to twenty degrees below zero, as the lowest point, but in the neighborhood of the arctic regions they live and grow to an enormous size.

Sir John Franklin, (whose sad fate is universally lamented,) in his overland expedition to those regions, between the years 1823 and 1827, wintered where the strongest brandy froze solid in a few minutes upon exposure, and the ink with which he was writing frequently froze upon his pen, although using it immediately before a huge fire of logs; and yet in a climate giving this intense, long-protracted and appalling cold, he gives an account of trees growing there whose circumference is larger than any we have ever heard of elsewhere. These trees, according to his statement, attain a height of from one hundred and fifty to upwards of two hundred and fifty feet, varying from *twenty* to nearly *sixty* feet in circumference; thus far exceeding

> "The tallest pine
> Hewn on Norwegian hills to be the mast
> Of some great admiral."

So it would seem that trees are not only able to bear this extreme condensation of cold, but to bear it through a long-protracted season of intense and unmitigated severity—coming out and growing freely through a great many years, and reaching a magnitude unparalleled in warmer climates.

That these trees were indigenous and suited to the climate, would not seem to argue any thing in favor of such hardihood and immense growth, any more than that our trees and plants, being indigenous, should possess the same power to resist the effects of cold. Besides, in nearly all our winters, the degree of cold for a short period is as great as it was at any time during the last one. Winter before the last the mercury fell as low in this region (being about 18 degrees below zero) as it did last winter, but without any injurious effect upon the trees and plants.

We are therefore led to believe that it is not the *intensity* of the cold that has caused the destruction daily witnessed among the trees and plants.

To what, then, may be imputed such wide-spread injury to trees?

Can it be excessive evaporation in early spring? Many trees are now dead whose branches were full of sap and plump on the first of April, showing no indications whatever of the speedy death which awaited them, with the exception that blossom buds were found to have lost their vitality. Griffiths, in his Chemistry of the Seasons, says that plants are frequently "blighted" during early spring by dry winds, for when branches and leaves are first put forth they are extremely succulent, and part with water so readily that during a dry easterly wind this loss by evaporation cannot be rapidly compensated for by the capillary attraction of the roots. If such were the cause of the injury, it should prove so annually, for fierce winds prevail throughout New-England for more than half the time during the entire spring months. If not to excessive evaporation, may the injury be attributed to the great and sudden changes which occur both in the autumn and spring?

Of late years the autumn weather has been mild and moist, and favorable to the growth of plants until a late period. The wood made during this time did not get perfected, and the result has been, that this growth is found dead in the spring on the quince, peach, apple and plum trees.

Does this late growth affect the general condition and health of other portions of the tree, or is there any probability that it has in any way been accessory to its death?

Changes of temperature in the spring are sometimes very great within a period of a few hours. Plants come forward in moist warm weather so that they show expanded leaves, buds are swollen and ready to burst, and the branches full of the ascending sap when the sudden fall of temperature takes place. Leaves that had come out turn black and die, and the tender and half-hardy shrubs perish with them. These are phenomena of annual occurrence, and familiar to most observers. But these changes, occurring after vegetation had fairly started in the spring, have not been supposed to prove destructive to trees of three or four, or even ten years' growth. That process seems to be one enveloped in mystery, and demands the attention of close observers and students of nature to solve its workings.

There are those among us who have given a life of attention to these subjects, and now that they are prominently before the persons interested in them, it is hoped they will make their theories and observations known.

We have barely touched upon these topics, more with a view of eliciting facts from those of vastly greater experience, than to express any decided opinions of our own. We hope our correspondents who have carefully observed these phenomena, will favor us at an early day with the conclusions at which they have arrived.

TREATMENT OF FLOWERS IN DECEMBER.

In guarding parlor plants against the frost, double windows are of great value. They are not merely useful as a defense against severe cold, but as a means of securing an equable temperament both by day and night. But in warm days it is desirable to give them fresh air to such extent as may seem safe. At night, it is better to remove them from the window. Different parts of the plant should also be turned towards the sun each day, otherwise the growth will be irregular. Generally, water sparingly in the winter.

Bulbous plants should have a plentiful supply of water; if grown in water, it should be changed every week, and even more frequently is better.

Roses require much sun, Camellias admit of none. When in bud, they should have a free supply of water, and when in flower, not be suffered to get too dry. They are often injured by too much heat. To guard against this, keep them cool as possible, even near the freezing point, and occasionally place a tuft of wet cotton in the forks of the branches and of the flower stems. Camellias should never be placed in a close cellar, since they require a frequent change of air, or rather a constant supply of fresh air.

All foliage should be frequently cleansed by a sponge wet with water of ordinary temperature, or say 60°.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE MINERALS OF LAMOILLE COUNTY, VT.

No. IV.

The rocks of Lamoille county are all of primitive formation, consequently not expected to furnish coal; but the county contains great mineral resources.

Carbonate of lime is found in Johnson and Waterville. It contains iron pyrites, which colors the mortar, as would the oxide of iron; yet it is used for domestic purposes and as a fertilizer. Steatite is found in Waterville, Stowe, and Sterling; that in the first named locality is most used, as it presents the greatest facilities for quarrying. Galena of good quality is found in Morristown, the gangue of which is chlorite slate. It has not been sufficiently explored to determine whether it will repay the labor of extracting; therefore no Yankee will engage in the experiment. Lead is also found in solid masses in Mansfield, (now Stowe.) Iron ore is abundant in Wolcott; it has been discovered in several localities in Elmore. From one quarry it has been worked to some extent. The mineral is so highly carbonized that the bars on removal from the forge have been manufactured into edge tools. Stowe and Eden contain chlorite slate of a beautiful green, much used by builders, and is easily quarried. Mica slate (or a mineral containing more mica than chlorite) is more abundant and in more general use than chlorite. It contains a greater portion of silex, which causes it to be hard and refractory. Boulders of granite have been found in Wolcott and Morristown, and readily split for building purposes.

In Mansfield (added to Stowe) is a quarry of alum stone, or alum slate. Its surface is covered with an efflorescence of sulphate of alumina, which, being carried to the foot of the quarry by the rain and snow, is deposited in imperfect crystals, that are gathered by the inhabitants for domestic purposes. The salt as collected is opaque and of a yellowish cast; it needs only to be dissolved, clarified, and crystallized, to become transparent or translucent.

Copper ore has been found in Sterling, high up the mountain near the quarry of steatite, and of difficult access; beautiful specimens of talc are met with in this locality.

Greenstone is found at the base of Elmore mountain in Morristown, the vein of which crosses the Lamoille river, and extends into Hydepark.

Bog iron ore is found in several locations in the county; the most abundant are in Hydepark and Stowe. Peat bogs are numerous, and the farmers are just beginning to avail themselves of this rich treasure, which in its natural state is but a nuisance. In the easterly section of Hydepark, and nearly in the centre from north to south, is a bed of yellow ochre several acres in

extent; it forms a fine, durable, and excellent paint, susceptible of a diversity of shades, by various degrees of ignition. The analysis of this ochre is as follows: in 100 parts there are 67 parts of peroxide of iron, a trace of protoxide of iron, 17 vegetable matter, 4 silex, and 12 titanium. The supply appears to be immense. The value is much enhanced by not requiring any dryer in its use, as it contains an abundance of this ingredient in its composition.

The agricultural products in our county this season are abundant, except grass and hay, which the early drought (why not *drouth?*) nearly ruined. There was a very trifle of rain in May or June, and a paucity through the season.

The price of hay in the season of cutting, for thirty-four years, has not exceeded $5 the ton, until last summer, when it was from $7 to $8, and is now ten, and very little to be sold.

The scarcity of hay causes stock to be low, with no sale for any cattle but beef, or sheep for slaughter, which is carried on at this time to an unusual extent.

Butter is scarce and dear, commanding twenty cents per pound, and has sold for twenty-three. Cheese is quick at seven cents.

Rye is $1; corn 84 cts.; wheat $1.25; oats 37 cts.; potatoes 25 cts. The potato crop is the best we have had for ten years; no rust or rot to damage, and they are very large and of a good quality. Our starch factories are taking all they can purchase at the above price.

I think I have asserted heretofore, there were more hops raised in the town of Hydepark than all the rest of the county. Hops had been so profitable for a few years, that many new yards were planted in the spring of 1851, which would produce a crop the present fall, which has been very abundant, and the hops well cured; the prices have ranged from 16 to 18½ cents per pound.

The quantity raised is over eighty-three tons; the amount of money from the raising of hops brought into our town is over twenty-eight thousand dollars. Many more are commencing the business, and the probability is, that in a short time the price will be reduced to six cents per pound, as has been the case here once before, when all but a few threw up the business.

ARIEL HUNTON.

Hydepark, Lamoille county, Vt., Nov. 20, 1852.

PRUNING.

THE Editor of the *New-England Farmer* writes as follows, on this important subject. He is very good authority:

Few of the duties of the farm are so badly performed as that of pruning—bad in the *manner* in which it is done, and in the *season* of the year usually selected for the operation. Trees are living, sentient things, and must be treated as such. Their young bark is as vulnerable to hob-nail boots as the back of the hand, and as easily mutilated by a dull saw or knife. No skilful surgeon would amputate a limb with dull instruments, or leave the bleeding wound exposed to the air; but many farmers who have pruned for forty years, and think they "know a thing or two" about it, do both. They have seen the tree put on its green livery in spring, blossom, perfect its fruit and increase in stature, and when it had performed its labors for the season, throw off the foliage which it no longer needed, and spread its broad limbs

resistless to the winter winds. Thus they have seen it live and breathe, and grow, and yet never seem to have appreciated it as a living friend, inviting them to its shade, regaling them with its fruits, and almost speaking in accents of affection!

Away with the axe, the coarse saw, and all dull tools about your trees, and in their places use those of the best make, and with edge as keen as Damascus blade.

Every wound that is made should be covered: if the tree is vigorous, and the place small, it will probably grow over, but covering greatly aids the effort of the tree in perfecting its outer garment. Paint, clay, gum-shellac and waxed cloth are used for this purpose; the shellac and cloth are certainly excellent. The shellac is dissolved in alcohol and applied with a brush; the cloth is spread with grafting wax made rather soft, and applied with a brush while warm. A strip of this tied round a wound, or a patch stuck on over it, will greatly facilitate the healing process.

Ninety orchards out of every hundred are mutilated and injured in being trimmed. Limbs that ought to be cut off are preserved, and those that ought to be retained are taken away. Some are sawed partly off, and allowed to drop, tearing away the wood and bark from the under side, and leaving a ragged and ghastly wound, that never heals, but brings permature decay. This is strong language, we are aware, but a careful inspection of most old orchards will confirm it.

There is need of but very little pruning where an orchard has been properly managed from the start; no large limbs will ever need to be taken away, unless broken by winds or injured in some other way. *Prune but little*, is a good motto. Suffer the shoots which start out on young trees to remain till autumn, when they have shed their leaves. The tree needs them, and Nature, ever ready with her helping hand, sends them out to aid the leaves of the top in elaborating the sap and increasing the whole growth of the tree. We find in an exchange a case in point, which we give as confirmatory of our theory. A correspondent of the *Prairie Farmer*, published at Chicago, Illinois, states that he pruned young apple trees four to six feet high, early in spring, and then kept the shoots rubbed off the lower parts of the stems, leaving only suitable heads, on one half the trees. The others were left with their shoots untouched from top to bottom. The result was, that those which received no summer pruning were 25 to 40 per cent. larger than the others, even after they were pruned up to heads the following spring. So it may be noticed in older trees that when most of the limbs are cut off in the process of grafting, large numbers of suckers are thrown out, and we believe for the same purpose that shoots are on young trees,—to keep up a proper circulation and balance in its powers.

As to the best time for pruning apple trees, we have no doubt. From personal experiments made for several years, from reliable books, conversations with practical men, and a pretty extensive examination of orchards, we are fully of the opinion that the autumn, after the leaves have fallen, is the most proper time. Where we have carefully pruned at this season, it has never been followed by a flowing of the sap and that discoloration of the bark which follows spring pruning. The wounds either heal over or become so dry and hard as to prevent decay, and the tree seems to sustain no check or injury whatever.

The head of the tree should be kept open to the air and light, and free from limbs crossing and rubbing against each other. Cut out these and the occasional dead limbs which may be found, and the orchard which has been well managed will need little more in the way of PRUNING.

CULTIVATION OF WHEAT—CORN—BARLEY.

The following is the manner in which Mr. Asaph Andrews, of Shrewsbury, Mass., prepares his land for cultivation. He turns his grass land in November. Harrows fine; applies twenty loads of green manure, which is incorporated with the soil; in the spring he ploughs with a one-horse plough about four inches deep. He plants corn, manuring with one shovel full in each hill; he plants Dutton from selected ears. This crop for several years amounted to from seventy-five to ninety bushels of shelled corn per acre; in the year 1851 he raised 200 bushels on 2½ acres. The spring following the corn crop, he splits the hills with a one-horse plough, harrows with a bush harrow, and then sows his land with Italian spring wheat; the quantity is two bushels per acre, and an equal quantity of salt upon the land. He prepares the seed by soaking it in water. If the foul seed does not rise at first, he applies salt to the water, which will cause it to rise; after soaking the seed he places it in a half-hogshead, and then sifts on ashes, mixing them well together; the seed will then be with the ashes about twice the natural size. Sows immediately. His crop of wheat has averaged thirty bushels per acre for the past eight years; one year he raised 44½ bushels per acre.

It is his custom to sow salt with all kinds of spring grain. The second year he seeds to grass. Occasionally he has to plough and seed the second time, owing to the seed not taking well. His land lies in grass six years; he plants 2½ and seeds 2½ acres yearly. Of barley, he raised one season 55 bushels per acre.

He asks a comparison with any farmer in the State in regard to the amount of stock kept on an equal number of acres of improved land.

Mr. Andrews considers the salt and ashes about equal for stiffening the straw.

VEGETATION OF THE FROZEN REGIONS.

The following extract is from Seaman's "Botany of the voyage of H. M. ship Herald, under the command of Capt. Kellett," in search for Sir John Franklin. The account of the remarkable phenomena exhibited in those icy regions, will be found new and exceedingly interesting:

"The soil is always frozen, and merely thaws during the summer a few feet below the surface. But the thawing is by no means uniform. In peat it extends not more than two feet, while in other formations, especially in sand or gravel, the ground is free from frost to the depth of nearly a fathom, showing that sand is a better conductor of heat than peat or clay, and corroborating the observation of the accurate J. D. Hooker, who, after a series of experiments in India, arrived at the same conclusion. The roots of the plants, even those of the shrubs and trees, do not penetrate into the frozen subsoil. On reaching it, they recoil as if they touched upon a rock, through which no passage could be forced.

"It may be surprising to behold a vegetation flourishing under such circumstances, existing independent, it would seem, of terrestrial heat. But surprise is changed into amazement, on visiting Kotzebue Sound, where, on the tops of icebergs, herbs and shrubs are thriving with a luxuriance only equalled in more favored climes. There, from Elephant to Eshholtz Point, is a series of cliffs from seventy to ninty feet high, which present some striking

illustrations of the manner in which Arctic plants grow. Three distinct layers compose these cliffs. The lower, as far as it can be seen above the ground, is ice, and from twenty to fifty feet high. The central is clay, varying in thickness from two to twenty feet, and being intermingled with remains of fossil elephants, horses, deer and musk oxen. The clay is covered by peat, the third layer, bearing the vegetation, to which it owes its existence. Every year, during July, August and September, masses of ice melt, by which the uppermost layers are deprived of support and tumble down. A complete chaos is thus created. Ice, plants, bones, peat and clay are mixed in the most disorderly manner. It is hardly possible to imagine a more grotesque aspect. Here are seen pieces still covered with lichens and mosses, there a shoal of earth with bunches of willows; at one place a lump of clay with senecios and polygonums, at another the remnants of the mammoth, tufts of hair and other substances which are evidently decomposed animal matter. The foot frequently stumbles over osteological remains, some elephant's tusks measuring as much as twelve feet in length, and weighing more than two hundred and forty pounds. Nor is the formation confined to Eshholtz Bay. It is observed in various parts of Kotzebue Sound, on the river Buckland, and in other localities, making it probable that a great portion of North America is under a solid mass of ice. With such facts before us, we acknowledge that terrestrial heat exercises but a limited and indirect influence upon vegetable life, and that to the solar rays we are mainly indebted for the existence of those forms which clothe with verdure the surface of our planet.

"A curious fact is stated respecting the condition of the vegetable world during the long days of the Arctic summer. Although the sun never sets while it lasts, plants make no mistake about the time when, if it be not night, it ought to be; but regularly, as the evening hours approach, and when a midnight sun is several degrees above the horizon, droop their leaves, and sleep even as they do at sunset in more favored climes. 'If man,' observes Mr. Seaman, 'should ever reach the Pole, and be undecided which way to turn, when his compass has become sluggish, his time-piece out of order, the plants which he may happen to meet will show him the way. Their sleeping leaves will tell him that midnight is at hand, and at that time the sun is standing in the north.'"

IRISH POTATOS FROM SLIPS.

Colonel William Murray, of Catoosa Springs, Walker county, Georgia, gives the following account of his method of growing potatoes from slips. We find it in the *Western Horticultural Review:*

Mix two bushels of charcoal with one bushel of air-slacked lime for every fifty bushels of potatoes, and sprinkle the mixture through the potatoes immediately after moving them from the field. In this way you may keep them perfectly sound ur til the spring.

Inasmuch as seed potatoes are with difficulty obtained at any price, I have been planting the Irish potato for the last three years by drawing the slips, and find that they produce in this way quite as well as the yam potato. One bushel of Irish potatoes planted in this way will produce more than two bushels planted from the seed. Bed them as you do the yam, draw the slip, open a wide furrow with the plough, and plant them in it on the horizontal plan, as you do grape cuttings, leaving from two to four inches of the top out of the ground.

Mr. Cobbett, in an essay on the Irish potato crop, written in 1816, predicts that it will eventually fail. To this opinion we dissent. The Irish potato is a native of America, where it grows wild, and was transplanted in Europe, where it became an indispensable article of food, and where it has been cultivated with great success under forced culture. Neither is the Irish potato a native of the Northern States. And yet we have been hewers of wood and drawers of water to the Yankees until we have forgotten when to dig our own potatoes or how to save them. Necessity now forces us to change our system of agriculture. The original stock of potatoes has become exhausted. We must renew it. Draw from your present crop slips or vines when from eight to ten inches long; plant as before described, in good loose free soil; gather your potato apples or balls, and you will get a fresh start. By drawing the slips, you get clear of the parent potato which is diseased. The potato apple will probably produce several kinds of potatoes, and a premium of $100 by the Southern Central Agricultural Society would probably bring the energy of our farmers to bear on the subject, and bring to notice new and improved varieties. I am satisfied that our people do not appreciate the value and importance of seed raised on our own soil in our own climate. The Cincinnati Society has offered a premium for the best seedling strawberry.

I live in a grape-growing, corn-raising and vegetable and fruit country, in sight of the Catoosa Springs, where my experiments may be seen by calling.

SWEET POTATOES.

A correspondent of the *Farmer and Planter* cultivates this root as follows:

MESSRS EDITORS:—Agreeable to your request in the May number of the *Farmer and Planter*, I now take my pen to give you my small experiment in the planting and culture of the sweet potato. You gave us in that number the experience (or practice) of Mr. James T. Ferguson, which is very good, but it is old-fashioned. The ridge is the present mode here—some very large and some small, and in various ways. I have for the last few years planted the easiest and cheapest way I have ever seen practised, and have succeeded as well as by any other mode. I break my land about eight inches deep in the winter, then manure, broad-cast, just before planting. I plant in the first part of April—laying off my rows four feet wide, then throw up in a bed, with a good turning plough, four more furrows, just as I would to plant cotton that distance. I then cut the potatoes in pieces to prevent them from growing, and to plant further. I chop with a hoe about eighteen inches apart; if I doubt the potatoes coming up well, I put two pieces in each hole, then draw a hoe full of earth on them. I draw no earth with a hoe to make a bed until the last working, which I do when the vines will nearly cover the earth. After planting I plough and hoe just as I do cotton, until the last working, when I use the turning plough again, and draw the earth with the hoe to the roots of the vines. Potatoes are not more troublesome to tend than cotton when cultivated in this way, and not more than half the labor that is required to plant in hills, which is a great saving in work, not only in cultivation, but also in digging. This operation may be performed with the plough, instead of the hoe, if you desire. I do a part of my digging with the plough.

In addition, I consider the potato crop, if well managed, the most profitable of any other that I am acquainted with the culture of; and yet its cultivation is but little practised, or on a very small scale, in proportion to its

importance, by most persons, myself not excepted—its great value not being properly appreciated. The two past years have not been surpassed under my knowledge for the extreme scarcity by drought. Yet under such extremes, I gathered from about three eighths of an acre of land, at the time of digging and housing potatoes, about sixty bushels each year, which were worth as many dollars; equal to one hundred and sixty dollars per acre. It is astonishing that it should take us so long to learn when our opportunities are so great, yet it has been so. An aged gentleman informed me a few weeks since that he had gathered about three hundred bushels from one acre.

AMMONIA—GUANO.

By the process of fermentation sugar is changed to alcohol and carbonic acid, and the alcohol is changed to acetic acid, the mass of the liquid forming vinegar: then comes the last stage, the putrefactive, in which the elements form still other combinations, or are set free as gases, uncombined. Such is the process carried on within the interior of the manure-heap. Chemical changes on the outer surface of the pile are of limited extent. Fermentation requires an atmosphere of at least 60°, and a due proportion of water. Hence the comparatively dry exterior of such a mass is subject to little change except evaporation; within, chemical agencies are active.

Who has not observed the ammonia of a horse-stable? Ammonia is formed by combining, in certain proportions, hydrogen and nitrogen. It is found in all animal matter, and in the solid and liquid excretiæ of our domestic animals. It is also evolved from all fermenting animal or vegetable matter. "If a current of moist air be made to pass over red-hot charcoal, carbonic acid and ammonia are simultaneously formed. This is, in reality, only a repetition, in another form, of what takes place when vegetable matter decays, or iron rusts, in moist air. The carbon, in one case, and the iron, in the other, decompose the watery vapor in the air, and combine with its *oxygen*, while, at the instant of its liberation, the *hydrogen* of the water combines with the *nitrogen* of the air, and forms ammonia."

Ammonia is essential to the growth of plants. An acre of turnips, radishes, cabbages, &c., according to Mr. Brown, often carries off 100 lbs., although 30 lbs. will supply an acre of most cultivated crops.

It is the presence of ammonia in excess which destroys plants, in the field or in the house, when they are too highly enriched by the Peruvian guano. This may probably be explained by the supposition that, in the decomposition of the guano, an excess of nitric acid, (*aqua fortis*,) composed of nitrogen and oxygen, is produced. Another injurious result follows such a use of any fertilizer, inasmuch as feeding either plants or animals to excess occasions repletion, and necessarily tends to disease.

The use of guano is becoming very common. It is so portable, so perfectly adapted to any soil and to any crop, and so important in compensating for a deficiency of stable manure, that it must soon come into universal use. But how absurd to waste the ammonia of your own stable, and then purchase from abroad the same substance, in the form of imported or prepared manures!

Why are these fertilizers, guano, &c., so useful? The answer may be made obvious to a mere glance of the eye. It is wonderful to observe how exactly all food is adapted to nourish that for which it is provided, whether

for animals or for plants. Thus the blood of the human species is almost precisely the same in substance with the flesh of animals, and this with the food nature provides for them.

In the following table, we begin with the food of plants, and next follows that of animals, hay, &c., and afterwards flesh and blood of our own species. Nothing shows more clearly the wonderful differences produced by slight variations in the proportions of the elements of different substances:

	Animal manure.	Dry horse manure.	Hay, dried at 212°.	Potatoes.	Beans.	Roast Beef.	Roast Veal	Human Flesh, or dry Blood.
Carbon,	35·00	38·60	45·80	44·10	38·24	52·59	52·52	51·96
Hydrogen,	4·27	5·00	5·00	5·80	5·84	7·88	7·87	7·25
Nitrogen,	2·53	2·70	1·50	45·10	38·10	15·21	14·70	15·07
Oxygen,	26·22	36·40	38·70				24·91	21·30
Ashes, (salts and earth,)		17·30	7·00	5·00	3·71	24·31		4·42

NOTE.—The first column, "animal manure," was the result of an experiment in France upon a large quantity. The quality of animal manures is modified by the kind of food the animal is fed upon

Here then is the whole story. With land and crops, just as with our own bodies, use wastes the elements which compose it. The land loses the very things that are needed for crops, inasmuch as the loss is occasioned by producing crops. These elements are furnished by manures; and the process of furnishing them is just as exactly a supply of raw material, out of which goods are manufactured, as when we furnish cotton and wool to the manufacturer of sheetings and broadcloths. The spinning and weaving is done by mother earth; and partly, at least, by the use of those chemical agencies which the Creator of the earth has put within her reach.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PEACH TREES.

BY HON. R. B. HUBBARD.

YOUR correspondent "H. C. N." finds fault with my inductions touching the matter of peach trees.

I did not intend to convey the idea that I was entirely satisfied with my own deductions. I stated some facts, which had come under my own observation, and by way of inquiry, inserted some inferences which it seemed to me might naturally be drawn therefrom.

The statements of "H. C. N." seem to me rather to strengthen my position. He says that like does not produce like in the peach, except in "the common sorts, which are generally quite small." I would not propagate these "common sorts;" but if it be true that *they* may be propagated from the stone, as I maintain and your correspondent admits, then my position is tenable. I do not propose the propagation of budded fruit wholly nor mainly. There is no difficulty in obtaining seedlings which, by cultivation, will equal the choicest varieties of fruit now known. These varieties were, in fact, all thus obtained.

In the town of South Hadley, Hampshire Co., Mass., is a small orchard of seedling trees, which has been in bearing for many years. The fruit resembles, more than any other variety, the Late Yellow Melacaton. The trees seem little less hardy than the apple tree. From the fruit of these thousands of young trees have been raised, and transplanted to different towns in the region; and, I am credibly informed, in no case have these been known to produce other fruit than that of the original stock.

In the town of Leverett, Franklin Co., Mass., is an orchard covering about two acres, all of the same variety, and propagated from the stone. The owner calls them "Red Rareripes." They resemble Crawford's Late. The orchard, considering the hardiness and productiveness of the trees, is far better than any other one in the county. They escaped uninjured from the severities of last winter, while budded trees all around were mostly killed.

"H. C. N." thinks I arrive at conclusions from too small a number of facts. It may be so. I give only the facts which have come under my observation, and make such inferences as seem to me legitimate from these facts. If facts can be adduced proving that my position is untenable, then we are all where we were before; no better and no worse.

In producing the peach, we of New-England have thus far met with but partial success. Whether we are most to blame, the climate, the soil, or the culture, remains yet to be shown. Whoever will throw any light upon the subject I shall regard as a benefactor.

BONES BOILED AND UNBOILED.

The *Mark Lane Express*, (Oct. 18,) in an account of a meeting of the Cheshire Agricultutal Society, has the following account of remarks made by Mr. Forster, of the Liverpool Bone Manure Mills, in reference to the comparative fertilizing powers of boiled and unboiled bones. They seem to us sound. The gelatine and other substances dissolved in the process of boiling are among the best fertilizers known, and hence it must be a matter of great moment to retain them.

Mr. Forster stated that he thought he could prove to the satisfaction of all present that genuine *unboiled bones* possessed much greater fertilizing powers than *boiled bones*. Mr. F. conceived that the only argument that could be advanced in favor of boiled bones was, that hitherto they had acted quicker than unboiled bones; the reson for this undoubtedly was that decomposition had to a great extent taken place in the process of boiling. And he would ask the gentlemen present to inquire of any experienced agricultural chemist if he considered it possible that the bone could be so far decomposed without removing to a large extent its fertilizing powers; indeed, should any one doubt this fact, he would ask how they could account for the very matter that is extracted from the bone in the process of boiling being occasionally used for manure, when from circumstances it has become unfit for the purpose for which it was extracted? Mr. F. called their attention to his sample of No. 1, or superfine bone dust, (which was ground as fine as guano,) and stated that it was his firm opinion that unboiled bones ground so fine would not only act more promptly than boiled bones, but that it would be found fully equal to the best Peruvian guano in that respect, with at least double the durability, and at a reduction on the first cost of over one third. Mr. F. stated that his firm had decided to grind nothing but genuine unboiled bone,

and that all manure sent from their mills was fully guaranteed as such. Some of their friends had suggested to them to grind both unboiled and boiled bones; but they had fully determined to have nothing to do with boiled bones as it might raise a doubt in the minds of some persons as to the quality of the manure they vended, and they felt in justice to their patrons and themselves, that they should be in such a position as to be above suspicion. All he (Mr. F.) would ask of the agricultural community was to give his firm one trial, and he felt fully assured that the manure would give such satisfaction as would insure their future favors.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CLEANLINESS IN CELLARS.

Messrs. Editors: — Spending a few days recently in the pleasant village of Winchester, New-Hampshire, I was made acquainted with the following facts, which you may deem of sufficient importance to occupy a place in your valuable journal:

The physician was called a number of times to visit the family of a farmer, living out of the village. For more than a month some member of the family, and most of the time two or three, were under the doctor's care. At length one died, leaving three very sick. The physician became convinced that there must be some local cause. He communicated his convictions to the family. A search was made, but nothing discovered. The doctor still insisted that the sickness causeless did not come. Another search resulted in the discovery of the true cause. A large quantity of half-eaten potatoes, mixed with the excrement of rats, had fallen through the bottom of a potato-bin, and, by the aid of heat and moisture, was undergoing the putrefactive fermentation. The odor from this mass was so very offensive as to cause vomiting on the part of the man who attempted to remove it.

No doubt is now entertained by the physician or the family that this decaying vegetable matter was the principal, if not the sole cause of the sickness. Ought not farmers and all housekeepers to be extremely cautious to remove vegetable matter from the cellar early in the spring? Ought not also more caution to be used in abating nuisances, by the application of deodorizing substances to sinks, waste-water spouts, vaults and the like? Ought not every cellar to be thoroughly cleansed at least once a year, and the walls whitewashed?

Quære: May not cattle be injured by standing over a cellar filled with decaying vegetables? R. B. H.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CHURCH RATE IN ENGLAND.

To Joseph Bancroft:

Respected Friend:—In your remarks upon the subject of tithes and church rates in my article headed, *Peculiarities of English Agriculture*, I wish with candor to make the following statement. The individuals who met the demands of the church rate in the manner I therein stated, were

for many years well known to the writer, and strictly reckoned among the same society of which you are, I suppose, a member.

I thought I had exculpated the Society of Friends from all voluntary submission to pay a tax to which myself, as well as they, conscientiously object, when I stated, *The Quakers resist the church rate to the very letter.* This they certainly do when they allow the law to take, as a matter of necessity, what they conscientiously object to paying voluntarily.

The tithes in the parish where I farmed were generally commuted annually. We had among us one Friend, rather an extensive agriculturist, but his share was always paid in with the rest of the parishioners, to fulfil the contract between the tithe owner and the producer.

When I used the term Quakers, I did it not as a word for reproach, for I have had some friends and many acquaintances among your religious community whom I shall never cease to esteem; and the poetry of Bernard Barton, who lived in the same town with me, greatly interested me in days gone by. Yours respectfully, ROBERT SEWELL.

Madison, N. J.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

LIVINGSTON, Sumter County, Ala., October 1st, 1852.

MR. EDITOR:—Please inform me through the columns of "The Plough, the Loom, and the Anvil," how to make milk "turn," or sour for churning, during the winter season, if you are acquainted with such a method.

Very respectfully, &c.

REPLY.—We can hardly presume that our correspondent really wishes to turn his cream sour, before churning, "in the winter season," or in hot weather, since all the arrangements of the dairy are intended to guard most effectually against such a condition. But if he has a fancy that way, there is no trouble in effecting it. Omit the scalding of your milk pans, and the result will no doubt be attained; and if not, add a *small quantity* of vinegar or of muriatic acid. But if our friend would have good butter, let him study how to avoid the change of which he speaks, by perfectly clean pans, glass if possible, and by keeping his milk in a place cool, equable, and with good fresh air.—EDS.

LIVINGSTON, Sumter County, Ala., November 8th, 1852.

Editors of the Plough, the Loom, and the Anvil:

SIRS:—My land is for the most part sandy. I have a field of fifty acres of sward which I wish to plant in corn the ensuing year, and wish you to give me some directions about manuring and planting it. It is somewhat rolling, and the most elevated portions are light dry sand, and just under the surface is clay soil. The bottom is what we call black land, and find it most productive. It has been lying out, or resting, for three years. Previous to that time it was sowed in wheat, oats and corn. It produces a very good crop of rye. Please inform me if you know of a preventive of smut in oats and rust in wheat, when grown on sandy land. Very respectfully, &c.

REMARKS.—The following remedy for smut is highly approved, and has been extensively used: Mix quicklime with boiling water to about the same

consistency as when used by masons for lime wash; pour, boiling hot, on the wheat, and turn over the mass rapidly with a shovel, so that each grain may get a slight coating. This should be done three weeks or more before sowing, otherwise the application will not be effectual.

With reference to the management of these lands, we recommend to our correspondent the use of the subsoil plough. The "light dry sand," with clay "just under the surface," is a description of soil which has often been improved very materially by this process. We conclude, however, that the true soil is very thin in this instance, and are sure that the application of rich composts, with guano, or phosphate of lime, will be of great benefit. The ploughing, we scarcely need to add, should be done this fall, and the ground suffered to lie till spring.—EDS.

NEW BOOKS.

[The notice of a few volumes we have received is necessarily deferred to the next issue.]

Series of Geographies for Schools. By ROSWELL C. SMITH, A. M. *First Book in Geography, Quarto Geography, Geography on the Productive System, with an accompanying Atlas.* New-York: Daniel Burgess & Co., 60 John street.

After a careful examination of this series, we can unhesitatingly recommend it as the "very best on the subject before the public," an opinion in which we find the Ward School-Teachers' Association of New-York fully agree with us in their report adopting it. Each book of the series is complete within itself, and has nothing of the abridgment character. The First Book is a perfect Child's Geography, has twenty colored maps and one hundred and twenty fine engravings, which are of a singularly practical character, and serve the purpose of explanatory matter; thus making it, without story-telling, and while confined solely to its subject, as attractive as a romance. The Quarto is on a larger scale, combining an Atlas of Maps and Text-Book in one work, and is equally beautiful. The Geography on the Productive System is a more strictly scientific treatise on Elementary Geography, giving all the desired detail. There is one feature of this series worthy of all praise, and that is its *extreme correctness.* The maps of the Quarto and of the Atlas are from steel plates, handsomely colored, and drawn on quite a large scale. They contain statistical matter enough to give a good knowledge of Geography, by merely inspecting them without reference to the book. For instance, the lakes have their length, breadth and depth engraved upon them; the rivers, their length and highest points of navigation for sloops, ships, and steamboats, the principal towns, their population, &c. *All the routes of travel can be seen and traced at a glance.* The *system of emblems*, as books, ploughs, crosses, &c., tell at once the religion, grade of progress from the savage to the enlightened states, population, &c. Nothing of importance seems to be omitted; as an instance of which, we may mention looking in vain on many maps for Nebraska, and for the Lobos Islands, until we examined this. We cordially commend Mr. Smith's series as deserving a place in every school and family throughout our country.

The Eclipse of Faith, or a Visit to a Religious Skeptic. 452 pages, large 12mo. Boston: Crosby, Nichols & Co. 1852.

This is a reprint of an English work, ascribed to Mr. Henry Rogers. We have seldom met with a book of greater ability. It is written chiefly in the form of a dialogue, and the interest is every where maintained with remarkable success. The following extract from page 59 gives the style as well as the nature of the topics discussed by the Skeptic and the Believer.

"I want to know whence I came, whither I am going; whether there be in truth, as so many say there is, a God, whose universal government extends even to me and my fellow-atoms called men, within whose sheltering embrace even *I* am not too mean for protection; whether, if there be such a being, he is truly infinite, or whether this vast machine of the universe may not have developed tendencies or involved consequences which eluded his forethought and are *now* beyond even his control; whether, above all, he be propitious or offended with a world in which I feel too surely, in the profound and various miseries of man, that his aspects are not *all* benignant; how, if

he be offended, he is to be reconciled; whether he is at all accessible, or one to whom the pleasures and the sufferings of the poor child of dust are equally subjects of horrible indifference; whether, if such Omnipotent Being created the world, he has now abandoned it to be the sport of chance, and I am thus an orphan in the universe; whether this 'universal frame' be indeed without a mind, and we are, in fact, the only forms of conscious existence; whether, as the pantheist declares, the universe itself be God, ever making, never made, the product of an evolution of an infinite series of 'antecedents' and 'consequents,' a God of *which* (for I cannot say of *whom*) you and I are bits; perishable fragments of a Divinity, itself imperishable only because there will always be bits of it to perish; whether this conscious existence of ours is to be renewed, and if so, under what conditions; whether the *vale, vale, in eternum vale*, is really the proper utterance of a breaking heart, as it closes the sepulchre on the object of its love."

We scarcely need say that we commend this book to every reader who would solve his own doubts, or be able to guide others in arriving at sound conclusions on this momentous subject.

Summer Time in the Country. By Rev. R. A. Willmott. New-York: D. Appleton. & Co. 245 pages, 12mo.

This little volume is of the same genus with another, though of a very different species, entitled "Up-Country Letters," which we have noticed within a month or two "Most people are conscious sometimes of strange and beautiful fancies swimming before their eyes," but very few are conscious of so unbroken a succession of classic comparisons and poetic suggestions as have passed through the mind of this author and been recorded in these pages. He who finds himself always at home in reading them has been a diligent and careful student of both ancient and modern literature. The author tells us of one whose countenance seemed "a very tablet upon which the ten commandments were written." Himself can be nothing less than a library of choice literature, in elegant binding. We "never saw so many glow-worms together as on this balmy evening," says he on another page; and we add that he has been remarkably happy in fastening them upon his manuscript; or we might more justly say that, like trees sometimes in winter, every leaf sparkles; and again, as he says of Demosthenes, "his lip [is] roughened by no grit of the pebble." We are not sure, however, that he has wiped out all the traces of midnight oil. Our only criticism would be a query whether the work is not too carefully studied for a country rambler in summer time.

History of the Conspiracy of Pontiac, and the War of the North American Tribes against the English Colonies, after the Conquest of Canada. By Francis Parkman, Jr. Boston: Charles C. Little & James Brown. 8vo, pp. 630. 1851.

There was a time when the name of Pontiac spread terror among his foes, while hi favor was considered a guarantee of personal safety. He was the Napoleon, the Blucher the Suwarrow of our Western wilds. Of course he was an object of intense interest to the scattered and trembling inhabitants of the then far West. The history of those times, so replete with startling and even terrible events, is given us in this volume bys one abundantly competent to the task. In interest few volumes are equal to this, while, the knowledge of the history here set forth should be part and parcel of the education of every one of our countrymen. It consists of an account of the various Indian tribes east of the Mississippi, the condition of the French and English colonies in America, with their relations to each other and to the Indians, and unfolds the progress of events in the contests between these diverse interests, which resulted in the establishment of the English, and finally in their independence. A vast amount of local information is naturally brought out, in these connections, of great interest to all, and especially to the people of the Western States.

Notes on North America, Agricultural, Economical, and Social. By James F. W. Johnston, M. A., F. R. S., &c. 2 vols. Boston: Charles C. Little & James Brown. Edinburgh and London: Wm. Blackwood & Sons. 1851.

We have but lately received these volumes from the Boston publishers, and the work is too well known and too familiar and too well appreciated to require so extended a notice as we should otherwise be disposed to give. We will remind our readers, however, that these volumes contain a treasure of great value, giving us, in the familiar style of a journalist, information of great practical importance in connection with agriculture, and a general idea of men and things, in the places which he visited, more truthful and reliable than most volumes issued by foreign travellers.

Reflections on Flowers, by Rev. JAMES HERVEY. New-York: John S. Taylor. Pages 140, 24mo.—A handsomely executed little volume, full of good thoughts, and elegantly illustrated by twelve well colored plates of flowers. In issuing this reprint, Mr. Taylor has done the religious public a good service.

The Landscape Drawing-Book; containing Views in New-England direct from Nature, &c. Boston: M. J. Whipple, 35 Cornhill.

Numbers 3 and 4 of this series are laid upon our table. The object of the publisher is to present finished lessons in landscape drawing, in the representation of actual scenes, by the best masters, showing the proper use of the pencil or crayon in sketching from nature. Examples are given from Champney, Hitchings, Williams, and others. A landscape in Sepia is contained in each number, drawn by E. A. Fowle.

The Eagle Pass, or Life on the Border. By CORA MONTGOMERY. G. P. Putnam & Co.

In this eighteenth number of Putnam's periodical publications we have a volume of similar character to that of Mrs. Moodie, entitled "Roughing it in the Bush." The scene is chiefly in Texas, and gives us a better notion of every-day life, and of the scenes there constantly to be met with, than any other volume we have seen. Some of the stories are thrilling, some are sad, some in themselves highly instructive, and all well done both by the author and publisher. Mr. Putnam is doing an admirable service to the public in these little volumes, and ought to be well remunerated.

Ives's Musical Series. New Method of Teaching Music. Daniel Burgess, 60 John street. *The Musical A. B. C.; The Musical Spelling Book; The Musical Reader; The Beethoven Collection of Church Music; The Mozart Collection of Sacred Music.*

Whoever desires to obtain a thorough and rapid knowledge of music will find this series invaluable. The pupil has no unlearning to do. His time and attention are required on those points which are of importance and of practical utility in all future stages of his progress.

The Musical Reader carries out the art and science to its greatest extent, and every step the pupil takes in advance, his interest and pleasure, as well as knowledge, continually increase. The selection of tunes is made with excellent judgment, and for this alone the books are richly worth their cost. There are many exquisite airs by Mr. Ives himself; and the whole, including the pieces by the great masters of the science, cannot fail to form a correct and cultivated taste, and are worthy of an introduction into every school and seminary in our land.

It is a misfortune that we do not hear more from Mr. Ives. We first formed an acquaintance with his musical abilities some twenty years ago, and were then satisfied that he had great merits as a musical composer, and an excellent taste. We have never altered our opinion, and only regret that the public have not had more abundant opportunities for improvement from his publications and his personal services.

NEW MUSIC.

Moore's Irish Melodies, with Symphonies and Accompaniments, by Sir JOHN STEPHENSON, and characteristic words, by THOMAS MOORE. Boston: Oliver Ditson, 115 Washington street, and Clapp & Co., Court street. New-York: Gould & Berry. 1852.

Mr. Ditson has here given us a pleasing series of songs, &c., as described in the title-page, extending through 199 pages, and embellished with a portrait of the famous poet. Like the book just noticed, it should be in all our libraries; and not a few of the melodies here given us will long continue to vibrate to the thrumming of our wives, sisters, and daughters, over the civilized world. The mechanical execution of the work, also, is very creditable to the publishers.

Wragg's Flute Preceptor; or the Whole Art of playing the German Flute rendered perfectly easy to every capacity, on Principles entirely new, &c., &c. Boston: Oliver Ditson, 115 Washington street, and C. C. Clapp & Co., Court street. New-York: Gould & Berry.

This quarto volume contains 90 pages of progressive lessons, and 64 original duets, arranged on all the keys in common use, with ample instructions and explanations "with-

out the aid of the master," and for a single key or for extra keys. It is evidence of the value of this work, that it is from the 40th London Edition. But he who expects to perform well on this or any other instrument, without persevering practice and correct notions of what constitutes good music, ought never to begin to learn. With these advantages, this book is ample, and is the best we have ever seen.

E. H. WADE, 197 Washington street, Boston, has furnished us with the following new sheets, embracing some very choice music:

The Germanians in Boston; a selection of the most favorite Pieces as performed by the justly celebrated Germanian Musical Society, consisting of Jenny Lind's Gipsey Song, Soirée Polka, Vielka March, Heloïsa Waltz, &c., &c. Arranged in a pleasing and easy style by F. B. HELMSMULLER.

This series is well selected, much of it being music of the highest order.

Les Nouveautés, Morceaux Agréables pour le Piano. Composé par FRED. BEYER.

Beyer's arrangements need no commendation from us. This *choice morsel* is from Flotow's opera of Alessandro Steadella, and is one of a set comprising airs from the best operas. If they all prove as good as this, they will form a very valuable series.

Mr. G. P. Reed, Tremont street, Boston, has sent us the following sheets of music: *Le Lis;* a brilliant waltz, by G. A. OSBORN.

Characteristic Pieces. 2d set. By F. SUCK. More difficult than the preceding, but a fine composition. Mr. Suck is an accomplished artist, and a good composer.

Dying Child. By L. V. H. CROSBY. A plaintive little song; but we don't like to cry *by art.*

Though from him I love afar. By VON WEBER. A very pretty song—not very difficult.

On the Blue Sea, a very pretty song, by E. A. HOSMER.

EDITORS' JOTTINGS.

MUSICAL.—MADAME SONTAG.—We look upon the arrival of this lady upon our shores as one of the important events that make up the destiny of communities. Amid the enthusiasm which she has excited, the thought has not unfrequently come to us, how unlike all this, both in the present and in the future, to the effects produced by a warrior, or a pugilist. Thousands are brought together and held in bonds, unresisted and almost irresistible, while they listen to her beautiful notes. Having heard her in Boston, in a hall admitting scarcely more than half the number which Metropolitan Hall accommodates, we do not wonder that she excited more enthusiasm in Philadelphia than in New-York, and more in Boston than in either. In the Melodeon her power and grace are fully appreciated. Here (in Boston) she has secured the admiration of the whole city. Critics can find nothing to censure, or even to improve, while her audiences hang upon her notes, and breathe only as she prompts them.

Pozzolini, too, in a hall of these limited dimensions, having regained his health, proves himself a finished artist. Rocco is a grand accession to her corps of assistants, while Badiali, as every body knows, has no superior on this continent. Little Paul Julien, not yet in his teens, has established his claim as master of his art, without an equal, in our opinion, since the youthful days of Mozart. The Germanians are the only orchestra we know, which cannot be improved by a change of members. They are at the head of the column, and we are astonished that even the *live* Yankees so easily keep possesson of this rich mine of music, while we cool Dutchmen sleep quietly over our own comparative leanness. Who wonders at the success of such concerts? But we purposed to view the moral aspect of the matter chiefly, and must do this by hints rather than illustrations. Fortunately a "scene" at her second rehearsal in Boston, furnishes nearly all that is necessary for our purpose. She had invited, as on a former occasion, the clergy with their families, and the gentlemen of the press. Like all others, they were delighted, and one of their number, between the parts, invited the audience to remain after the close of the performances set down in the bill.

The venerable Dr. Sharp, his head white

with years spent in unbroken devotion to the cause of his Master, was requested to act as the representative of the assembly, in the expression of their gratitude for the rich feast to which they had been invited.

As Madame Sontag re-appeared on the stage, the Reverend Doctor addressed her, commencing as follows:

"Dear Madam, I have had the honor of being requested, by the ministers of all the religious denominations present, and the gentlemen of the press, and I may also include all others of this audience, most sincerely to thank you in their behalf, for the invitation which permitted us to be present at this interesting rehearsal, and to assure you of the high gratification which has been experienced whilst listening to those sweet and melodious sounds, which touched some of the most tender chords of our hearts, and by which we were delighted and entranced.

"The well-attuned voice, giving utterance to refined and noble sentiments—now expressing itself in tones of love, of patriotism, of Christian hope and joy, and now sending forth its subdued accents of pity or of grief—cannot fail of exerting a purifying, humanizing and elevating influence over the soul.

"I do not wonder that an English gentleman of a former generation should have said: 'Let me make your national songs, and I care not who frames your laws.'"

The venerable Doctor closed his address as follows:

"And now, Madam, we sincerely pray that your sojourn in this young land of promise and of hope may be most happy and successful; so that when you return to your fatherland—and to your 'Home, sweet home'—you may not have one unpleasant recollection connected with your distant visit.

"And when your last strains on earth shall have been sung, may you so have used your divine gift, improved by art, that if it be possible, you may for ever, in a nobler and sweeter voice, sing God's power to save."

Madame Sontag could not restrain her emotion, but wept freely whilst holding both the venerable Doctor's hands, and could only express her thanks thus gracefully in silence. A little girl from the Warren street Chapel then advanced and presented her with a bouquet, bearing an inscription, whom she at once stooped and kissed; this act at once affording the audience relief, in giving vent to the applause they had been long anxious to bestow. Madame Sontag, on retiring to the waiting room her emotion continued, and she observed, "Oh! that good clergyman—never has my heart been so touched before. How can I thank him, and all those kind friends?" And on his being introduced, she again personally expressed her feelings to him. The Rev. Mr. Barnard announced as the intention of both the Protestant and Catholic clergy, to present Madame Sontag with a copy of the Holy Scriptures, in the blank leaves of which should be the autographs of the various pastors present. A bouquet was also presented to little Paul Julien by the school children, inscribed, "God bless and keep thee."

Who could fail to be delighted and profited by such incidents? The effect of refined music is to elevate and to refine others; and when connected with incidents like this, the result cannot fail to be exceedingly efficient in awakening sentiments of humanity, love, and gratitude. Who will not join in the closing prayer of the good Dr. Sharp? It commends itself to us, anew, every time we see her name, or recall to our remembrance her delightful notes.

Cubic Measure.—Very few persons have correct notions in regard to this measure, and hence make most erroneous estimates in their computations of size and capacity. Some three years since we ordered from the cabinet maker a bureau for our little girl. It was to contain one half as much as one of the ordinary size, and we agreed to pay him $6.50 for it. About a week afterwards he told us it was all ready, and wished us to step up and see how we liked it. We did so, and were chagrined enough to find it a mere toy, eighteen inches square in front, and nine deep. The man himself looked very discontented, and he inquired what was the matter. "I do not get enough for the bureau by one dollar; it is just half the size of the large ones which sell at $15." "How did you calculate its size?" "By making it half as large each way as the common ones: they are 36 inches square in front, and 18 inches deep; this is 18 inches square in front, and 9 inches deep." "You assert then that this is just half the size of the large ones?" "I do." "Will it hold half as much?" "It don't look as if it would, but I have nothing to do with that; it is just half the size." "Is that the only reason why you think you do not get enough for it?" "It is: I have not otherwise counted its value." "Would it satisfy you to receive the same proportion of $15 that it is in size to the common bureau?" He was glad enough to assent, and at our request wrote down the agreement; which we put in our pocket, immediately after tendering him $1.87½, telling him the bureau was just one eighth the size of the other, and the money was just one eighth the price of the other. He was astounded,

and the more so when we explained and exemplified the rule. As he was a poor man, we took the bureau and paid the original price; but it was not worth one half the money. He had learned a valuable lesson, that as large again each way was eight times as large altogether.

The affair made some noise in the little town, and caused much inquiry about cubic measure. A farmer who understood the subject well remarked to us, in speaking of it, that an almost precisely similar occurrence happened to himself that fall. A neighbor falling short of hay, the previous winter, borrowed one of his stacks of some sixteen feet in diameter at bottom. When he gathered in his own crop, he brought to replace what he had taken two similarly shaped stacks, each eight feet diameter at base, and then informed his friend that he had fully paid the debt. The other told him that he had only brought back one fourth of what he had taken away; but for some time failed to convince him, until at last reference was fortunately made to the number of loads, and then it was all evident enough.

Both the cabinet maker and the farmer were able to repeat the table for cubic measure with readiness, but yet knew not its practical applications. As little did a friend who called our attention to a twelve-inch cubic block of iron, a few weeks since, and whom we asked its weight. "Some fifty pounds, I suppose." "How much do you think a cubic foot of water weighs?" "About ten pounds." Very much surprised was he to hear that its true weight was 62½ lbs., and that this amount had to be multiplied by the specific gravity of iron, to give the weight of a block of the metal of the same dimensions.

The fault lies with the teacher, who fails in his duty when he encumbers the mind of the child with useless lumber in the form of tables of weights and measures, without teaching their meaning and practical applications. No wonder the school-room is so repulsive to the child: it would be equally so to the man. Roswell C. Smith, who has succeeded beyond any man in this country, and perhaps any other, in simplifying school-books for children, seems fully aware of this general fault. In a preface mentioning his Productive System, he cites from the North American Review: "We have not the least hesitation in saying that two or three years in the education of almost every individual in this country have been thrown away in studying what they did not understand." This is as true as it is lamentable. We need practical teaching. For Cubic Measure and its relations there should be in every school-room a set of blocks and vessels of various proportionate sizes, and the pupil thoroughly exercised in their use, thus making the study as easy as it is interesting.

Gold Pens.—The manufacture of gold pens has become a regular branch of American industry, and is constantly increasing in extent and importance. A large amount of the precious metal is annually withdrawn from circulation for the purpose of furnishing substitutes for the "gray goose quill." The statistics of the business, and description of the processes involved in the manufacture, would, we think, make a very interesting article for our pages, and this we purpose shortly to give. We have no doubt that for this object gold will rapidly supersede quill and steel. It is so much more economical that no man can afford to use any thing else in preference. We have heard some complain that they could not find a gold pen to suit them; but a little inquiry soon showed that they had not obtained the best article. The pen we are now writing with was bought several years since from Albert G. Bagley, and, as the printers can testify, has been kept in constant use and severely tried, yet it seems to improve rather than deteriorate with age. The apparatus for writing seems every year approaching nearer perfection. First the time-honored goose-quill, then the steel pen, and lastly the iridium-pointed gold pen. The Extension Holder was a valuable addition, and now but one thing more seems desirable, and that is an invention to retain enough ink in the holder to save the endless dipping so annoying and so indispensable. Our faith in American ingenuity assures us that this desideratum will ere long be attained, and nothing more be left to wish for in convenience in writing.

New Lamp for Camphene and Burning Fluid.—We have been shown and have carefully examined a new Safety Lamp, contrived by Mr. Newell, 8 Winter street, Boston, intended to guard against the explosion of these widely used fluids. The contrivance seems to us perfect and entire. Its simplicity leads us to wonder that the plan did not occur to somebody long ago. It consists merely of an adaptation of Sir Humphrey Davy's Safety Lamp to the gaseous contents of the lamp, instead of those gases which, in mines, are external to it. It is cheap, too, and can be applied, at a trifling cost, to ordinary oil lamps.

Mr. Newell has also Safety Cans and Fillers, which may be used without any hazard in immediate vicinity to a burning lamp, being provided, both in its openings at the top and side, with the same kind of se-

curity. We have seen several experiments tried, and tried repeatedly, with cans thus secured, and with those not thus secured, and we are sure that our confidence is not misplaced. It has received the approval of Drs. Jackson, Hayes, and Torrey, and Prof. Silliman.

"A new aromatic Burning Fluid" has also been prepared by the same gentleman, which burns with a beautiful white flame, leaving no incrustation on the wick. It is "free from grease, smoke, or disagreeable odor, and from camphene, or spirits of turpentine." So, at least, says Mr. Newell, though we have had no means of testing these statements.

There is an agency for the sale of these lamps in New-York.

Fall River Route to Boston—Eastern Railroad.—We have twice attempted to say something (in Sept. and Oct.) in commendation of this route, but after being in type, read and corrected, the matter prepared being too much for our space, these notices were the unfortunate victims which must bide their time. But now we *must* say that we have passed over this route, and we have sent ladies of our family, unattended, and have uniformly found not only excellent boats, skilful pilots and commanders and agents, and gentlemanly clerks, but our friends have received important aid and very polite attention from the gentlemanly captain, when we are sure that he did not even guess that he was showing favor to the family of an editor, which might be turned to some account. No lady need apprehend the want of any thing in the matter of personal comfort, which constant regard for those on board can provide. The tables are well provided and handsomely furnished, and the state-rooms, berths, &c., are all that a reasonable man can claim.

The Eastern Railroad forms the lower route from Boston to the East, and is well provided with easy cars and courteous conductors. Passing along the seaboard, through Lynn, Salem, Newburyport, Portsmouth, and other pleasant and flourishing towns, full of local or historical interest, the ride is unusually agreeable. By stopping over one train only, in several of these towns, access may be had to objects of great interest, which would well repay not a little painstaking.

A Fine Farm.—The *American Farmer* contains a description of Shirley estate, on James River, in Virginia, containing 900 acres of cultivated land, divided into five fields, from 175 to 190 acres each. The rotations are corn, wheat, clover, fallow wheat, pasture; thus affording some 860 acres for wheat. Rather hard cropping—yet so much better than common treatment, that the fallow wheat has been estimated at 30 bushels per acre, and that on corn land 20 to 25 bushels, where once only 12 to 14 were obtained. The corn, formerly but five to seven barrels, now 10 to 12. One great secret of success is lime, clover and plaster. The wheat drill and reaping machine are used; and threshing performed by mule power, at the rate of three hundred bushels per day, the process of winnowing being completed in the barn basement at the same operation. Complete system and order prevail, and there is a placeforeverything,andeverythinginitsplace.

Camden and Amboy Railroad.—The affairs of this road are, as they always have been, in the most prosperous condition. The business of the Company has materiallly increased the past year, which is owing, in a great measure, to its excelleut management. The road passes through a pleasant part of New Jersey from Amboy to Camden; and the sail down the Bay on the splendid boat "John Potter," from New-York to Amboy, is the most delightful in the world. The cars of the Company have long been noted for their beauty and excellence; and all connected with the road, in whatever capacity, are gentlemanly and obliging. The principal agents, Wm. H. Gatzmer, Esq., at Philadelphia, and Capt. Ira Bliss at New-York, are gentlemen eminently qualified for their stations; and it is to their services that the travelling public are chiefly indebted for the excellent management for which the Camden and Amboy road is so universally distinguished.

Harlem Railroad.—The business of this excellent road is constantly increasing, both as regards freight and passengers. The freight trains are heavily laden with produce from the interior, and by an arrangement recently made, this branch of the business of the road cannot fail of being greatly increased.

In publishing their winter arrangements, the Company have announced that *three* daily trains will run to and from Albany, and at such hours as cannot fail of accommodating the travelling public. Two of these are express trains, and make the time between the two cities inside of four hours. The fare has also been reduced to *one dollar and fifty cents*, which is only about one cent a mile. This is a rare combination of economy and speed, which will not be without its reward by the public, as the road is under the best of management, and passes through a most delightful region of country.

DVERTISING DEPARTMENT OF THE PLOUGH, THE LOOM, AND THE ANVIL.

Advertisements of a proper character will be inserted according to the rates expressed in the Tabl ewith subjoined. An Index of the BUSINESS ADVERTISED, and the NAMES OF ADVERTISERS, appears under Table of Contents on the second page of the cover, thus presenting peculiar inducements to advertisers.

RATES OF ADVERTISING.

Space Occupied.	One Month	Two Months	Three Months	Six Months	One Year.
One square of 12 lines....	$ 1 50	$ 3 00	$ 4 00	$ 7 00	$12 00
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Three " of 36 "	4 00	7 00	10 00	15 00	25 00
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One half of a page.....	10 00	15 00	20 00	30 00	50 00
One whole page.....	20 00	30 00	40 00	60 00	100 00

A square consists of TWELVE LINES of single width columns e foregoing table, with these remarks, makes one square.

TO ALL

griculturists, Horticulturists, & Florists.

The following valuable Books have just been published by

JOHN P. JEWETT & CO.

17 & 19 CORNHILL,

BOSTON.

BRECK'S BOOK OF FLOWERS, being a complete guide to the tivation of a Flower Garden; by Joseph Breck, Esq. Price cents.

SCHENCK'S KITCHEN GARDENER'S TEXT BOOK.—A thorough e on the management of the Kitchen Garden; by Peter A. henck. Price 50 cents.

A TREATISE ON HOT HOUSES: Their Construction, Heating, d Ventilation; by R. B. Lenchars, Esq. Price $1.00.

COLE'S AMERICAN VETERINARIAN, or Complete Farrier; S. W. Cole. Price 50 cets.

COLE'S AMERICAN FRUIT BOOK, or Complete Orchardist; S. W. Cole. Price 50 cents. 48,000 Copies of Mr. Cole's two cellent books have been already published. The above valuble books are for sale by the principal booksellers throughout e country. 500 Agents wanted to sell the above in every ate in the Union. Address, (post paid,) the publishers. jy.tf

Massachusetts Horticultural Seed Store,

38 SCHOOL ST., BOSTON,

AZELL BOWDITCH, PROPRIETOR.

Just received at this well-known establishment, a large assortment of

GARDENING IMPLEMETNS,

Comprising—Shears for trimming hedges, and for trimming trees; Knives of various patterns, for pruning, budding, &c., &c.; Peach Pruners; Flower Scissors, &c., &c.

Also a large assortment of Perennial and Biennial Flower Seeds.

Garden Vases of various styles, Chimney Cans, &c.

Horticultural and Agricultural Books.

Bouquets, Cut-flowers, and fruit furnished at short notice. jy

GREAT BARGAINS IN PIANOS.

PERSONS in want of Pianos are invited to examine our large assortment of instruments, which will be sold or let on the most reasonable terms. The Subscribers are the sole agents for the celebrated Boston houses, Hallett & Allen, A. W. Ladd, Woodward & Brown, and W. P. Emerson. Also in store, a good assortment of New-York Pianos. The great variety from which persons can here select, will enable them to procure a Piano that cannot fail to suit. Persons wishing a good Piano at a low price, will find it advantageous to call and examine. Pianos tuned.

SAFFORD & BROTHER,

jy. 369 Broadway, New-York.

A GARDENER

F EMINENT SKILL & MANY YEARS' EXPERIENCE,

WHO HAS OBTAINED THE MEDAL

rome of the BEST HORTICULTURAL SOCIETIES in GREAT BRITAIN,

Would like to make an engagement, in or near New-York.

r terms, qualifications, &c., apply to the Office of "THE OUGH, THE LOOM, AND THE ANVIL," 9 Spruce Street, New-rk.

Nov. tf.

MARLBORO' HOTEL,

TEMPERANCE HOUSE,

JOHN A. PARKS,

229 WASHINGTON STREET,

Nov. tf. BOSTON.

Dutch Bulbous Roots.

THORBURN & CO.,

136 Broad St., **NEWARK, N. J.,**

e just received from Holland a choice assortment of DOUBLE ACINTHS, TULIPS, NARCISSUS, CROCUS, DOUBLE JONQUILLES, OWN IMPERIALS, IRIS, and other Bulbous Roots suitable planting at this season of the year. The Hyacinths are parlarly fine, and most of them of the sorts most adapted to m in pots or glasses, with all the best sorts for forming a in the garden, than which nothing can be more beautiful in April, all at very low prices, for which see new catalogue, which will be sent on application, and contains full directions for their culture. Garden and Flower Seeds, Double Dahlias of the finest sorts, Greenhouse Plants in great vgriety, all on moderate terms.

Newark, Oct., 1852. Nov., tf. g.

Philadelphia, Wilmington and Baltimore Railroad.

Four Daily Lines between Philadelphia and Baltimore.

FARE $3.10.—A reduction of 10 cents made to those purchasing tickets at the office.

PHILADELPHIA, WILMINGTON, AND BALTIMORE RAILROAD LINES, at 8.15, 1.45, 3, and 10.15.

On and after Thursday, April 1st, the Mail Lines for Baltimore will leave the Depot, 11th and Market streets, as follows, viz.:

MORNING LINE at 8 1-2 o'clock, daily, except Sunday, through in 5 1-2 hours, stopping at all the regular way stations on the road.

AFTERNOON EXPRESS LINE at 2 P. M., daily, except Sunday. Through in 4 1-2 hours—stopping only at Chester, Wilmington, Elkton, and Havre de Grace.

NIGHT LINE at 10 1-2 P. M., daily; through in 5 1-2 hours, stops at the principal stations on the Road.

The trains leave Baltimore for Philadelphia, as follows:—Express train at 8 1-2 A. M., and Mail trains at 11 A. M., and 6 1-2 P. M.

NEWCASTLE AND FRENCHTOWN LINE AT 3 P. M.

The Steamboat Robert Morris will leave Dock st. Wharf daily, except Sunday, at 3 P. M. This line leaves Baltimore for Philadelphia from Bowly's Wharf at 6 1-2 A. M.

Fare by this Line, . . $2,50 Forward Deck . . $1,50

Charleston, S. C., Wheeling, Va., Pittsburg, Pa., and Washington, D. C.—Tickets through to these points can be procured at the Depot, Philadelphia. Fare to Charleston, $19; Wheeling, $11; Pittsburg, $10; Washington, $4.80.

WILMINGTON ACCOMMODATION TRAINS.—The Accommodation trains stopping at all intermediate places between Philadelphia and Wilmington, will run as follows: Leave Philadelphia from Depot, 11th and Market streets, at 11½ A.M., 4½ and 7½ P. M. Leave Wilmington at 6 A. M., (Market train) 7.15 A. M., and 5 P. M.; and Freight Train at 7 P. M., with Market Car attached.

The Mail Trains leave Wilmington at 11 A. M., 3 and 10 P. M.

Fare to Wilmington, 50 cents. To Chester, 25 cents.

Excursion tickets to Wilmington, good to return by any train same day, 75 cents.

Tickets for all Trains must be procured at the offic before taking seats in the cars.

BAGGAGE NOTICE.—100 pounds baggage allowed each passenger, and the Company holds itse lfresponsible only for the loss of wearing apparel, to the value of $100.

Any one wishing to send a trunk or parcel by Mail Trains, can do so only on application at the office and paying freight on the same. H. H. HUDDELL, Agent.

Hudson River Railroad.—Winter Arrangement.—New-York to and from Albany and Troy.

On and after Friday, December 3d, Trains will run as follows:

Going North.

Leave New-York, from the Office, corner Chambers street and College Place, at

6 A. M. Express Train for Albany and Troy, connecting with Northern and Western Trains, stopping only at Peekskill, Cold Spring, Fishkill, Poughkeepsie, Rhinebeck, Tivoli and Hudson. Through in 4 hours, from 31st street.

8 A. M. Way Mail Train for Albany and Troy, stopping at all Mail Stations.

1 P. M. Way Train for Albany and Troy, stopping at Sing Sing, Crugers, Peekskill, Cold Spring, Fishkill, New Hamburgh, Poughkeepsie, Rhinebeck, Tivoli, East Camp, Oakhill, Hudson, Coxsackie and Stuyvesant, and connecting with the Express Train leaving Albany at 6.30 P. M. for Buffalo.

2 P. M. To Tarrytown, stopping at all way stations.

4 P. M. To Poughkeepsie, stopping at all way stations.

5 P. M. Express Train for Albany and Troy, stopping only at Peekskill, Cold Spring, Fishkill, Poughkeepsie, and stations North, on Signal.

5.30 P. M. To Peekskill, stopping at all way stations.

7. P. M. Emigrant and Freight Train for Albany and Troy, stopping at all way stations.

11 P. M. To Tarrytown, stopping at all way stations.

Going South.

Leave Troy Engine Station at 5.30 A. M., and Albany at 5.45 A. M. Way Mail and Freight Train for New-York, stopping at all stations.

Leave Troy Engine Station at 7.30 A. M., and Albany at 7.45 A. M. Express Train for New-York, stopping only at Hudson, Tivoli, Rhinebeck, Poughkeepsie, Fishkill, Cold Spring and Peekskill.

Leave Troy Engine Station at 10.30 A. M., and Albany at 10.45 A. M. Way Train, stopping at Castleton, Schodack, Stuyvesant, Coxsackie, Hudson, Oakhill, East Camp, Tivoli, Barrytown, Rhinebeck, Staatsburg, Hyde Park, Poughkeepsie, New Hamburg, Fishkill, Cold Spring, Peekskill, Sing Sing, Tarrytown, Dobbs Ferry, Yonkers, and Manhattan.

Leave Troy Engine Station at 3 P. M., and Albany at 3.15 P M. Way Train, stopping at all stations.

Leave Troy Engine Station at 6.30 P. M., and Albany at 6.45 P. M. Express Train, stopping only at Hudson, Rhinebeck, Poughkeepsie, Fishkill, Cold Spring, and Peekskill.

Leave Troy Engine Station at 8.30 P. M., and Albany at 8.45 P. M. Night Mail Train, stopping at all stations on Signal.

LEAVE POUGHKEEPSIE FOR NEW-YORK.

At 7.10 A. M., stopping at all stations above Peekskill, and at Cruger's, Sing Sing, Tarrytown, Dearman, Dobbs' Ferry, Hastings, and Yonkers.

LEAVE PEEKSKILL FOR NEW-YORK,

At 7 A. M., stopping at all way stations.

LEAVE TARRYTOWN FOR NEW-YORK,

At 7 A. M., and 5 P. M., stopping at all way stations.

SUNDAY TRAINS.

Leave Canal street at 7.30 A. M. for Poughkeepsie, and 5 P. M. for Albany, stopping at all way stations.

Leave Poughkeepsie for New-York at 4.30 P. M., stopping at all way stations.

Leave Albany for New-York at 5 P. M., stopping at all way stations.

☞ Passengers are requested to procure Tickets before entering the Cars. Tickets purchased in the cars will be 5 cents extra. GEORGE STARK, Sup't.

New-York, Dec. 3d, 1852.

New-York and Erie Railroad.—Winter Arrangement.

TRAINS run as follows:—Leave New-York from foot of Duane street, daily, as follows:—

1. Day Express Train, at 6 A. M., (Sundays excepted,) for Dunkirk, there connecting without delay, with first class steamers for Cleveland, running in connection with the Express Train for Cincinnati; and with first class steamers for Toledo and Monroe, running in connection with the Michigan Southern Railroad. (Dinner at Deposit, and supper at Hornellsville.) Passengers by this train take the Canandaigua Railroad at Elmira, and arrive at Rochester and Buffalo the same evening.

2. Mail Train at 8 A.M., (Sundays excepted,) stopping at all the stations. This train remains over night at Elmira, and geos on next morning at 7.30, arriving at Dunkirk at 4.55 P. M. (Dinner at Narrowsburgh.)

3. Way Train, at 1 P. M., (Sundays excepted,) via Piermont for Delaware.

4. Way Train, at 4.45 P. M., (Sundays excepted,) for Suffern and Otisville.

5. Evening Express Train, at 6 P. M. for Dunkirk, there connecting with first class steamers for Detroit direct; and also for Erie, Ashtabula, Cleveland, Sandusky, Toledo, and Monroe. On Saturdays this train runs only to Elmira. (Supper at Turner's. Breakfast at Hornellsville.)

6. Emigrant train at 6 P. M., (Sundays excepted,) for Dunkirk.

TRAINS TO NEW-YORK.

1. Day Express Train leaves Dunkirk at 5 A. M., (Sundays excepted,) and arrives in New-York the same evening. Passengers from Buffalo and Rochester take this train at Canandaigua.

2. Way Train leaves Sufferns at 7 A. M., (Sundays excepted.)

3. Mail Train leaves Dunkirk at 7.01 A.M., (Sundays excepted,) stopping at all the stations, and arriving in New-York same evening.

4. Mail Train leaves Dunkirk at 10.15 A. M., (Sundays excepted,) stopping at Elmira over night.

5. Accommodation Train leaves Dunkirk at 1.30 P. M., (Saturdays and Sundays excepted.)

6. Evening Express train, leaves Dunkirk at 5 P. M. Passengers from Buffalo and Rochester take this train at Canandaigua at 9.30 P. M.

NEWBURGH BRANCH.

Trains run daily, (Sundays excepted,) as follows:—

Leaving Newburgh at 5.45 A. M., and 5 50 P. M. Leave Chester at 7 and 11.30 A. M., and 7 P. M.

FREIGHT TRAINS.

Freight Trains leave from foot of Duane street, at 6 P. M., for all stations on the road, and for Canandaigua, Rochester, Buffalo, and all the Western States.

CHARLES MINOT, Superintendent.

For Boston, Via Newport and Fall River.

By the splendid and superior steamers EMPIRE STATE and BAY STATE, of great strength and speed, particularly adapted to the navigation of Long Island Sound, running in connection with the Fall River and Old Colony Railroad, a distance of 53 miles to Boston only.

Leave pier No. 3, North River, near the Battery.

The steamer BAY STATE, Captain William Brown, on Mondays, Wednesdays, and Fridays, at 4 o'clock, P. M.

The steamer EMPIRE STATE, Captain Benj. Brayton, on Tuesdays, Thursdays, and Saturdays, at 4 o'clock, P. M.

This Line is the only one that runs direct from Newport.

These steamers are fitted with commodious state rooms, and every arrangement for the security and comfort of passengers, who are afforded by this route a night's rest on board, and on the arrival at Fall River proceed per railroad, reaching Boston early the following morning; or can remain on board until after breakfast, and leave Fall River at a quarter past 6 o'clock, A. M., by the accommodation train, which arrives in Boston at a quarter before 9 o'clock, A. M.

The rates for passage and the price of state rooms, the same as by the other lines.

A steamboat runs in connection with this line to and from Providence, daily, except Sundays.

Freight to Boston is taken at the same rates as by the other regular lines, and forwarded with greater expedition by an Express freight train, which leaves Fall River every morning (Sundays excepted) at 7¼ o'clock, for Boston and New-Bedford, arriving at its destination at or about 11, A. M.

For freight or passage, apply on board, or at the office on Pier 3, North River. For state rooms or berths, apply on board; or if it is desired to secure them ahead, application may be made to

TISDALE & BORDEN, Agents, 70 and 71 West street.

Camden and Amboy Railroad for Philadelphia.

From Pier No. 1, North River, foot of Battery-place, by Steamboat John Potter. Two lines daily. Morning Line leaves at 10 A. M.; Afternoon Express Line at 2 P. M., through to Philadelphia at 6 1-2 P. M. Fares: 1st class cars, $3; 2d class line, by 2 T. M., only $2. Returning, leave Philadelphia from foot of Walnut st., at 10 A. M., and 2 P. M. Emigrant Line by steamboat Transport, from Pier No. 1, at 4 P. M. Fare, $1,50.

FROM PHILADELPHIA FOR NEW-YORK, AND INTERMEDIATE PLACES.—Through in 4½ hours.

At 10 o'clock A. M. and 2 o'clock, P. M., from Walnut street Wharf.

FARE, $3. Second Class, only $2.

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STEAMBOAT TRENTON,—At 9 A. M., and 5 1-2 P. M., for Tarcony, Burlington, and Bristol.

STEAMBOAT JOHN STEVENS,—At 2 1-2 o'clock, P. M., for Bordentown and Intermediate places.

RAILROAD WAY LINE FOR BORDENTOWN AND INTERMEDIATE PLACES.

At 4 1-2 o'clock P. M., from Walnut street Wharf.
For Freehold at 8 A. M., and 2 P. M.
For Lambertville at 9 A. M., and 2 1-2 P. M.
For Mount Holly at 9 A. M., 2 1-2 and 4 1-2 P. M.
Office for inquiry, 44 Delaware Avenue.

WILLIAM H. GATZMER,
Agent C. & A. R. R. Co.

New-York and New-Haven Railroad.—Winter Arrangement.

Nov. 1, 1852.—Trains out of New-York, leave near corner of Canal street and Broadway.

ACCOMMODATION AND SPECIAL.—At 7 and 11.30 A. M.; 4, (Express to Stamford and Norwalk, and stopping at all stations beyond,) and at 5 P. M., through to New-Haven. At 9.10 A.M., and 6.30 P. M., for Port Chester. The 11.30 A. M. runs in connection with train from New-Haven to Hartford and Springfield, and with train over the Canal Road.

EXPRESS TRAINS for New-Haven, Hartford, Springfield, Boston, Connecticut River and Vermont Railroads, to Ogdensburgh and Montreal.—At 8 A. M., stopping at Stamford and Bridgeport, connecting with the Housatonic and Naugatuck Railroads at Bridgeport, and Canal Railroad at New-Haven—and at 3.30 P. M., stopping at Stamford, Norwalk, and Bridgeport, connecting with Housatonic and Naugatuck Railroads at Bridgeport.

TRAINS INTO NEW-YORK.—Accommodation and Special—At 5.30, 7, and 9.35, A. M., and 4.20 P. M., through from New-Haven. At 5.30 A. M., and 3.45 P.M., from Port Chester. The 9.35 A. M. receives passengers from Springfield and Hartford and Canal Railroads at New-Haven. The 4.20 P. M. receives passengers from Hartford and Springfield Railroads.

EXPRESS TRAINS leave New-Haven on arrival of trains from Boston, at 1.15 and 8.50 P. M., (stopping at Bridgeport, Norwalk, and Stamford;) leaving Boston at 8 A. M., and 3.30 P. M.

See large bill of advertisement at the Station House and principal Hotels.

GEO. W. WHISTLER, Jr.,
Superintendent.

Manhattan Life Ins. Company

108 *Broadway, Cor. Pine Street, N. Y.*

DEPOSITED WITH THE COMPTROLLER OF THE STATE FOR THE SECURITY OF ALL POLICY HOLDERS, exclusive of a large and rapidly augmenting Premium Fund.

Persons Insuring with this Company, will be entitled to their pro rata share of the first declared dividend. The rates and principles adopted have stood the test of experience, and must secure, beyond contingency, the object for which Life Insurance is effected,—immediate and permanent aid to the widow and orphan.

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ABRAM DU BOIS, M.D., *Medical Examiner*, attends at the office daily, from 2 to 3 o'clock P.M.

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RALPH & CO.,

Manufacturers and Vendors of Agricultural Implements and Machines, and Dealers in Field and Garden Seeds, Fruit and Ornamental Trees, Domestic Animals, Fertilizers, &c.,

NO. 23 FULTON ST., NEAR FULTON MARKET, NEW-YORK.

THE Subscribers announce to their friends and the public that they have opened an establishment for the manufacture and sale of articles as above, which they offer at moderate prices.

The principal Implements and Machines are made under their own immediate supervision, by experienced mechanics, from the best materials, and after recently improved models.

The SEED DEPARTMENT embraces all the approved varieties adapted to the field and garden culture of the West Indies, Mexico, and the whole territory of the United States; and the FRUIT and ORNAMENTAL TREES, as well as the DOMESTIC ANIMALS, furnished by us, will be of the choicest kinds, and selected by competent judges.

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Produce on Consignment.—We are prepared to receive and sell on commission all kinds of Agricultural Produce, not immediately perishable; such as grain, seeds, indigo, cochineal, beef, pork, butter, eggs, rice, sugar, molasses, honey, wax, hides, cocoa, tobacco, cotton, wool, hemp, mahogany, &c. &c.

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March. 3m.

FOR SALE,
IMPROVED SHORT-HORN & ALDERNEY CATTLE,

Of different ages; the greater part of them bred on the farm of Thomas P. Remington, Esq. Many of the Short Horns are descendants of the herd of the late Mr. Bates, of Kirkleavington, England, justly celebrated as one of the best and most scientific breeders of the age. The Alderneys have been bred directly from the best imported Stock. The Cows are unrivalled as rich Milchers. Apply to

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WORKS ON PHYSIOLOGY AND NATURAL HISTORY,

FOR SCHOOLS.

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I. PLANT LIFE, comprising the Nutritive Apparatus.
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This work shows the unity of the Life Power, and its mode of operating in the vegetable and animal kingdoms. It makes Phrenology orthodox, and is a guide to those who wish to develop their higher nature, and cause all their powers to work most easily and to the best advantage. Its style is peculiarly clear and interesting.

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At this Establishment small Bells pass through the same process in manufacturing as large ones, and we flatter ourselves that the Bells turned out at this Foundry are superior in point of tone and workmanship to those of any other in the Union.

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Clothing made to order in the best style, and sent to any part of the United States.

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Oct. 12t.

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CHOICE POULTRY

FOR SALE,

Comprising the following Varieties, viz.:

COCHIN CHINA

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CANTON FOWLS.

BUFF, BROWN, BLACK, AND WHITE

SHANGHAES.

CHITTAGONGS,

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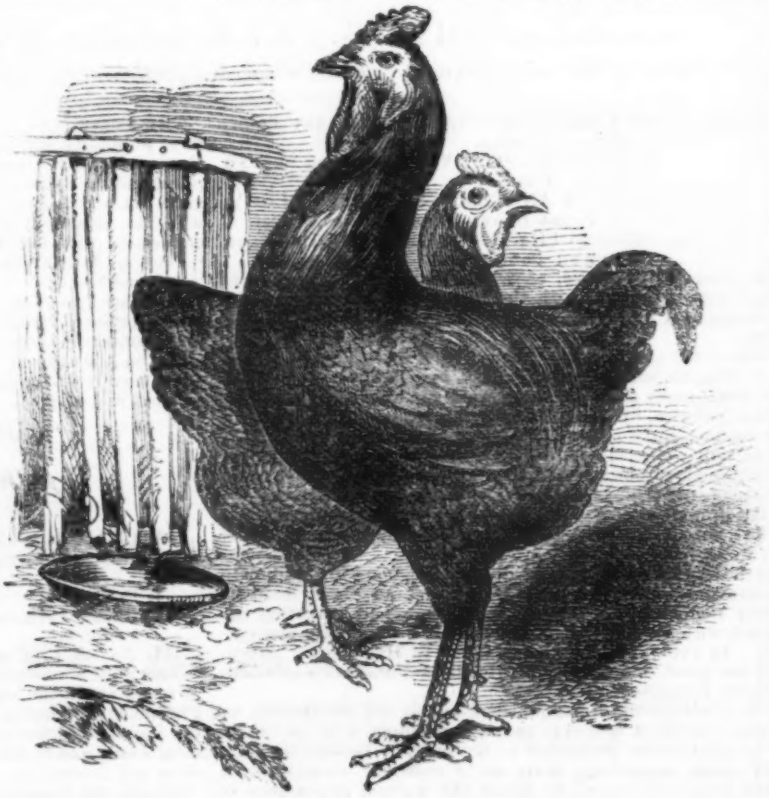

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Honorary and Corresponding Member of the principal Horticultural Societies of the United States and Europe, begs leave to inform his friends and all the Nurserymen of the Union in general, that he has made large preparations, and has now on hand a considerable stock of the finest evergreen Seedings, Roses, Fruits, and Ornamental Trees, &c., most suitable for the American markets. The experiments of several years of putting up large orders for the United States enable him to flatter himself that he has now all the necessary knowledge to give full satisfaction, and to assure the delivery in good order of all the Trees, &c., ordered.

He also begs to inform all Nurserymen who have not already received the supplement for 1852 to his Catalogue of 1851, that it can be obtained free of any charge at the office of his agent, M. E. BOSSANGE, 138 Pearl Street, New-York, who will also attend to forward all orders sent to him, and to pass through the Custom House and re-ship all goods ordered, without any delay and with the greatest care.

Address M. André Leroy, Angers, France, care of *M. Ed. Bossange, 138 Pearl St., New-York.*

All agricultural papers please insert the above three times prior to January, and send their bill and a copy of each paper to the undersigned. Oct. 3t.

AGRICULTURAL CHEMISTRY.

YALE COLLEGE, NEW-HAVEN, CONN.

The annual course on Agricultural Chemistry will commence January 7th, 1853, and continue ten weeks. The subject will be made plain and practical by numerous experiments. Soils and manures will be analyzed before the Class, and the processes explained in detail. A good Agricultural Library is accessible to persons attending these Lectures. The fee for the course is $10. Persons desiring it may engage in practical analysis of soils, &c., in the Laboratory at an extra charge. Board may be obtained at from $2 to $3 per week. Samples of soil for analysis may be sent by mail. They should be taken from a thorough mixture of specimens from different parts of the field, avoiding the mixture of soils of very different character. Three ounces, with roots and pebbles removed, is sufficient. Facilities are afforded for the study of other branches of Practical Chemistry. Analysis of ores, mineral waters, &c., and other chemical investigations undertaken on reasonable terms. For further particulars, address Professor JOHN A. PORTER, New-Haven, Conn. Dec. 1t.*

ELTON & CO.,

No 3 Tryon Row, Harlem Railroad Building,

NEW-YORK.

HAVE JUST PUBLISHED

ELTON'S AGRICULTURAL ALMANAC,

FOR 1853.

Containing directions of work to be done by the Farmer, the Gardener, and the Horticulturist, in the different months of the year, under the following heads:—The Farm, Kitchen-Garden, Flower-Garden, Hot-House, Green-House, &c.

"It is, besides being merely an Almanac, a sort of Farmer's vade mecum, and adapted to all years and seasons. Under each month is given the necessary work for the month, for the farm and garden, with judicious and valuable directions as to what is to be done, and how best to do it. It is an excellent book of reference, even for those who cultivate no more land than will grow a house plant."—*New Era*, (Washington, D. C.)

Dec. 3t.

REDUCTION IN THE PRICE

OF

BOGLE'S HYPEREON FLUID,

FOR RESTORING, PRESERVING AND ADORNING

THE

HAIR,

To the following low rates, viz:—Bottles formerly sold at 50 cents reduced to 25 cts. Bottles formerly sold at 75 cents reduced to 50 cts. " $1.00 " " 75 "

THE many worthless imitations of this celebrated Hair Restorative, palmed on the public under the lure of cheapness, has determined the Inventor to crush them, by selling his famous "Fluid" at even a lower price than they can afford to sell their vile trash. At the same time he assures the public that the "Hyperion" will always continue to be as good as heretofore, which has given it celebrity throughout the globe. This, with Bogle's "Electric Hair Dye," and other preparations, are sold by his Agents everywhere in the United States and Canadas. Dec. 6t.*

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To a rate as low as any of the Philadelphia or New-York Literary Weeklies,

and thus open the way for a greatly extended circulation, and therefore a broader usefulness.

From all sides has come the spontaneous acknowledgment, that the "Home Gazette" has thus far been

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published in the United States, but with this testimony has also come the over and over again repeated wish that we would reduce the club prices so low that persons of moderate means could, by forming large clubs, procure

THE HOME GAZETTE FOR ONE DOLLAR.

the price at which so many papers can now be obtained. To this desire we now yield, and have also *reduced the whole range of Club Prices*, so that as small a number as four persons, by joining in a club,

CAN GET THE PAPER FOR $1,25 EACH.

☞ See the statement of terms below.

In issuing a Prospectus for 1853, the publishers can only reiterate what they have before said, viz: that

T. S. ARTHUR, THE EDITOR,

has entire control of the paper; that not a line goes in without his supervision; and that he is, therefore, responsible for all that appears therein. So that just the same confidence felt in him by the public as a sound and safe moral teacher, may be felt in his "Home Gazette," which is emphatically a supporter of Religion and Virtue, and the conservator of good morals and social well-being.

In conducting the "Home Gazette," the editor's aim is, to blend the entertaining, the useful and the instructive together in such a way as to *secure a high degree of interest*, and yet at the same time INSTRUCT AND ELEVATE BOTH THE INTELLECT AND THE AFFECTIONS.

The "Gazette" is, in a word, A HOME NEWSPAPER, and the editor stands pledged to make it all that a home newspaper should be—chaste, dignified, and entirely free from everything that can vitiate or in the least deprave the mind. With the opening of the year 1853, will be commenced

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As heretofore, the original contributors for the "Home Gazette" will be among the best writers of our country.

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The choicest of the carefully edited articles in the Home Gazette are re-issued, monthly, in the form of a Magazine, under the title of ARTHUR'S HOME MAGAZINE. For terms, &c., see below.

ARTHUR'S HOME MAGAZINE.

The "HOME MAGAZINE" presents certain features and attractions not fully possessed by any of our many excellent monthly publications. Its name implies its character. For *all tastes* the editor will not attempt to cater; but, for the thousands and tens of thousands who love what is good and true and beautiful; who have an interest in all that is genial in humanity; who, like the wise bee, are ever seeking to gather the honey of life, as they walk steadily and hopefully onward; the "Home Magazine" will come, we trust, as a valued friend and pleasant visitor, and leave the minds of all who read it refreshed and strengthened.

The Home Magazine is published monthly. Each number contains 80 large, double-column, octavo pages, making, in the year, 960 pages of choice and valuable reading; or two volumes of 480 pages, for each of which a full index will be given. The volume begins in Oct. 1852.

We offer our readers no meagre feast. In our eighty large and closely printed pages will be found an amount and variety of reading, in kind and quality, not, we believe, to be obtained any where else for the same money.

TERMS, IN ADVANCE.

1 copy one year,	$2	4 copies one year,	$5
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3 " "	4	12 " "	15

Where a club of twelve subscribers and $15 are sent, a copy extra will be furnished to the agent or getter up of the club, or to any address he may designate.

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FIRE-PROOF PAINT.

THE original and only genuine article that can be sold without infringing upon my patent. This article, in a few months after being applied, turns into slate or stone, forming a complete enamel or coat of mail over whatever is covered, bidding defiance to fire, weather, or water. It has been found, upon analyzation by Dr. J. R. Chilton, of this city, to consist of larger proportions of silica, alumina, protoxide of iron, and magnesia, with lesser of lime and carbon. The transition, therefore, from the soft paint to the hard slate is (in the opinion of Drs. Chilton and Lock) accounted for according to nature's own laws; and the longer it is on, the harder and more permanent it becomes. It has been tested about seven years, and that first applied is now like stone. It has also been tried in several fires in Akron, Ohio, where all the fire insurance companies have since published that they will insure buildings, &c., covered with this substance, at a lower rate of premium than those covered with tin or zinc, considering it a better fire-proof.

The Fair of the American Institute have, for the last three years, awarded to me the highest premiums. Diplomas have also been presented from the New-York State Fair, and the State Fair of Massachusetts.

LOOK OUT FOR FRAUD,

As there are scores of unprincipled individuals digging, grinding, and endeavoring to sell all kinds of worthless, counterfeit stuff, calling it fire-proof paint. No one can manufacture and sell the genuine without infringing on my patent, which, having been submitted to referees, and also to the Hon. Daniel Webster, is decided to be good and valid. I have just commenced three suits against different parties, and am determined to prosecute every person who infringes the patent; and those individuals who have given credence to the pirates will soon have an opportunity of defending themselves before a court of justice.

The original and genuine Patent Fire-Proof Paint, either in dry powder, or ground in oil, can at all times be had at the general depot, 84 Pearl st., New-York, from the patentee.

W. BLAKE.

My.'52.

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AT $5 A YEAR, STRICTLY IN ADVANCE, BEING ONE DOLLAR LESS than any other paper of the same size in the United States.

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Particular attention is paid to reports of Lectures upon scientific and literary topics, and such other public discourses delivered in the city and elsewhere, as are interesting and instructive to the general reader.

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Railroad intelligence, including information respecting the condition and progress of railroads throughout the United States, constitutes a distinguishing feature of the Traveller.

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Carefully prepared articles on Money Matters are given from a competent and authentic source.

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Ample means have been secured for obtaining the *fullest details of Foreign News* on the arrival of the trans-Atlantic steamers, both at Boston and New-York; a very extensive *Correspondence* at various points of importance throughout the country, has been established; experienced and competent *Reporters* are employed; and extended arrangements have been made for obtaining, through the *Electric Telegraph* and other means of communication, the earliest and most reliable intelligence upon all matters of public interest and importance.

To accomplish these objects, and to make the paper eminently entertaining and valuable, no pains or expense is spared.

In relation to Politics, the Traveller is entirely INDEPENDENT of all party considerations, and will aim, with scrupulous care, to present an impartial view of public affairs—to discuss public measures with a single view to the public good—and to do equal justice to public men. In no sense, indeed, is it a partisan paper. Wholly unpledged to any party, and unbiased by any favor or prejudice, it has no end to answer but to promote its own lawful and proper interests, and subserve the highest public good; in doing which it has ever recognized its obligation to preserve the editorial and advertising columns free from all immoralities and impurities—to have nothing in its columns that may not safely enter the family circle.

Although the price of the Traveller is less than that of any daily paper of equal size and quality in the United States, yet it claims to be not otherwise inferior to the best that circulate.

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CHILLICOTHE, OHIO, Tuesday, April 13th, 1852.

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